Master thesis
Economics, 2-year Master of Philosophy

Is Fiscal Policy Keynesian?

Fiscal policy in Western countries: an empirical study

Jørgen Heibø Modalsli

University of Oslo, Department of Economics

May 2005

Acknowledgements

I would like to thank my supervisor, Professor Steinar Holden, for skilled advice and helpful encouragement. Simen Markussen and I have had some useful discussions while working on our separate theses, as well as good cooperation on common data sets. He is also responsible of drawing my attention towards this field in the first place.
Postdoc. Jo Thori Lind has provided good advice on econometric methods on several occasions; he always seems genuinely happy to help. Debra Bloch and Nathalie Girouard at the Economics Department of the OECD have provided valuable help in understanding the calculations of the cyclically adjusted balance indicator. Halvor Teslo has read through one of the many almost-finished drafts and provided useful comments.

Many thanks also go to Tuva and Margareth Aurora, especially for motivating me to get this thesis finished before summer.

Summary

This thesis examines the influence of the cyclical position on discretionary fiscal policy in twenty Western countries in the time period 1960-2004.

The first chapter discusses economic theories related to the concept. A traditional Keynesian view of economic fluctuations is presented, saying that economic fluctuations should be avoided and that counter-cyclical fiscal policy is one way of dealing with the problem. This is then contrasted with several objections. Real business cycle theory doubts the adversity of fluctuations; from this point of view, there is nothing to gain from active stabilisation. The possible efficiency of fiscal policy can be doubted, for example, the Monetarist school claimed that a fiscal-monetary policy mix was a better option, and that active policy was more likely to fail than not. Finally, the intentions and abilities of policy-makers can be questioned; the optimal way to conduct policy may be unrealistic, and governments may have motives that conflict with the general interest.

Four hypotheses are presented. The primary question is whether fiscal policy is conducted in a counter-cyclical manner. I also look for changes in fiscal policy over time. In addition, I test for the influence of public debt and the effects of the political ideology of governments.

The second chapter deals with measuring fiscal policy. Four different approaches are considered, leading to six different numerical indicators of discretionary fiscal policy. The cyclically adjusted balance, advocated by the OECD, uses country-specific production functions to calculate potential output, and estimates induced responses of economic variables to fluctuations in GDP. Blanchard's Fiscal Impulse uses unemployment data to adjust for cyclical variation. The indicator developed by Braconier and Holden adjusts using a combination of decomposed GDP data and unemployment. The discretionary budget balance, developed by myself, calculates trend values of parts of the budget not related to social security. The variations among these indicators are in some cases large, and are shown to influence the results of the econometric estimations.

The third chapter concerns the econometric analysis. The hypotheses are formulated as linear equations, and are tested using the fixed effects estimator. Fiscal policy is shown to have a pro-cyclical tendency across all countries. When estimating the equations for countries separately, they are shown to have different characteristics, with pro-cyclical policy still being the dominant trend. The cyclically adjusted balance is shown to give results that deviate from the other indicators, generally indicating a more countercyclical policy.
Public debt is found to lead to significantly tighter fiscal policy.

For the remaining two hypotheses, no clear results are found. There are, however, indications suggesting a more pro-cyclical policy in the 1990s than in preceding decades. Conservative parties show a slight tendency to lead a less countercyclical policy, and strong governments appear to have more countercyclical tendencies than governments with weaker parliamentary support.

Index

Introduction

As for so many other students of economics, my introduction to macroeconomic theory was the Keynesian model of demand, consumption and investment. An increase of government expenditures would, in this model, increase overall production, provided that there is available capacity in the economy. When searching for a topic to finish my master's degree, I thought it would be interesting to examine whether this Keynesian model has any relevance in the real world; do governments act this way, or are other factors more important? Does the simple macroeconomic model have any relevance beyond being a useful pedagogic tool?

This thesis examines the European countries of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and the UK, in addition to Australia, New Zealand, Japan, Canada, and the US. I have mainly used data from the OECD Economic Outlook, which has been produced since 1960. I have used STATA to examine the data, perform the regressions, and make some of the diagrams, while the rest of the figures are made in Excel. The tables of coefficients are also generated using self-made Excel macros.

When working with the thesis, I was struck by the rather arbitrary way the indicators of fiscal stance were used; in the relatively few studies I have found, little justification is given. This thesis examines some of the differences between these calculations. The main hypotheses discussed are

- Do governments act Keynesian?
- Is fiscal policy constrained by public debt?
- Has there been a trend towards less Keynesian policy?
- Do the political views of the government matter for policy?

The thesis is divided into three parts. The first chapter deals with the traditional Keynesian motivations for fiscal policy and some of the main objections to these theories, and presents the central hypotheses of the dissertation. The second chapter concerns the methodology of measuring fiscal policy; several indicators of discretionary fiscal policy are presented, as well as some other values important for the calculations. The third and final chapter presents and discusses the results from the numerical analysis.

1 Thoughts behind Fiscal Policy

The aim of this section is to shed light on the theoretical foundations of practical policy. What determines whether governments act counter-cyclically? The rationales for the Keynesian view of the world, as well as theories that could oppose its conclusions, will be discussed.

1.1 Keynesian theories: Baseline

Keynes' "General Theory" was published in 1936. Rather ambitious, the book set out to reform the entire field of macroeconomics. In the first chapter, the business cycle theory prevalent at the time is referred to as a "special theory" applicable only to a few special cases, whereas Keynes' theory, in contrast, should cover "the general case"[1]. Keynes seems to have had good reason for his arrogance; the book soon became a fundamental building block of economic policy.

A common feature of what I will label **traditional Keynesian theories** is an emphasis on the adverse effects of economic fluctuations, and the importance of nominal variables, incomplete information, and externalities. Society as a whole may not be able to take the best possible actions. Thus, in recession, a rational government may prefer to increase its activity. If the activity level is lower than the government thinks optimal, with high unemployment and low consumption, public debt can be increased to finance public consumption instead, pushing the economy forward and lowering unemployment. The positive effects of such an expansion is assumed to outweigh the negative effects of increased public debt, as the Keynesian paradigm believes unemployment decreases slowly without government intervention. This focus on the adverse effects of economic fluctuations, and the possibility of policy to alleviate these effects through countercyclical policy, will be my reference description of traditional Keynesians.[2]

---

[1] Keynes (1936), p. 3

[2] Lodewijks (2003) argues that the popularized form of Keynesianism has moved away from the ideas presented in "General Theory". Whether this is correct or not, "Keynesianism" will, in this thesis, refer to

Models that incorporate nominal rigidities, such as the traditional Keynesian models of the 1950s and early 1960s, could, if taken to their ultimate conclusion, implicate quite simplistic conclusions; some Keynesian models may suggest that the government can run an expansionary fiscal policy indefinitely, to maintain an "artificially" high level of output. Such conclusions, however, fail to take account of the fact that people will simply adjust; they will come to expect such expansions, and this will affect, among other things, the way wages and prices are set, one feature that is typically taken as given in Keynesian models.[3] For this reason, even if some Keynesian descriptions may implicate "paradise" policies, such conclusions should be (and are) met with scepticism. This is of course not the case for all such theory, and many modern Keynesian models incorporate the conclusions in other ways, such as multiple equilibria.

1.2 The non-adverse cycle

Several objections can be raised against the traditional Keynesian paradigm of demand management. I will present some of these below, grouped into three categories. The first objection, **real business cycle-theory**, says that avoiding fluctuations is not necessary. Economic fluctuations are assumed to be caused by fluctuations in "real" phenomena such as technological growth, and it is perfectly rational for the economy as a whole to slow down in recession; in addition to the preference for lower spending, lower productivity means consuming more leisure may be desirable. If this is correct, fiscal policy should not be used counter-cyclically, as fluctuations in output are merely fluctuations in the "natural" level. This train of thought, which is in accordance with much of pre-Keynesian macroeconomics, has been further extended in the second half of the twentieth century by economists such as Robert Lucas and Edward Prescott, known as "New Classicals", a school that gained momentum through the stagflation of the 1970s.

---

this popularized version, as it is formalized into, for example, the IS-LM model, with emphasis on the implications specified above.

[3] See, for example, Romer(2001), p. 245

Traditional Keynesian models emphasise sticky prices and barriers to adjustment. Still, they need to have a "target" towards which the economy moves – even if it never gets there. As this target is defined by where the real variables have stabilized, it can be compared to the predictions of the classical models. Thus, similar movements in the economic variables can be interpreted differently with different theories. Classical theories may interpret a fluctuation as caused by changes in the real variables; a fluctuating equilibrium. Keynesian theories would agree that a theoretical "equilibrium" is defined by real variables; however, they would disagree on the volatility of this state, and rather interpret the fluctuations as deviation from this equilibrium, caused partly by fluctuations in nominal variables.

If recessions are perceived as fluctuations in the natural level of output, as in classical business cycle theory, this has important policy implications. In some cases, a surprise recession could be interpreted as a reduction in expected future income; predictions about future income are based on income today, and are likely to go down in recession. This decrease in income could then induce consumption smoothing, meaning that consumption, private and public, should go down as well. This is in accordance with the "sound finance" view of public economics advocated by classical pre-Keynes economists.

Another interpretation of this could be to understand the differences between traditional Keynesian and classical models as different opinions on the **time perspective**. Keynes is famous for saying "In the long run, we're all dead"; he emphasised the short-run effects of economic policy. Keynesianism also recognizes that the economy will have to reach a "natural" equilibrium in the long run; however, this is assumed to take so long that demand management can have important effects in the short and medium run. Classicists, however, argue that the economy is in the Keynesian "long run" state all the time, and therefore focus more on this. This could mean that hard-line classicists would not acknowledge the Keynesian definition of recession, as the economy cannot, by definition, move below its natural level, and notions of any equilibria other than the observed states will not be needed.

1.3 The imperfection of economic policy

Being sceptical to countercyclical economic policy does not necessarily imply a support for real business cycle theory. Even though one recognises the adverse effects of economic fluctuations, one does not have to believe in active stabilisation policy; it could be that fiscal policy is not a good tool to alleviate these adverse effects.

Monetarist theory could be understood as a variant of such thoughts. In the debate between Keynesians and Monetarists of the 1960s, the Monetarists, championed by Milton Friedman, argued that the effect of monetary policy had been undervalued in the Keynesian consensus.[4] They postulated that a combination of fiscal and monetary policy was the best way to regulate the economy. Along with this, the Monetarists were more sceptical to the role of policy in general, arguing that active policy often was conducted in a bad way and that economists could not be trusted to come up with optimal and "true" predictions.

The effects of government interference may be limited by **Ricardian equivalence**; if the public does not believe a reduction of taxes during a recession is sustainable, they will simply save more, offsetting anticipated tax increases in the future. If the hypothesis of Ricardian equivalence holds, there may be good reasons to discard some Keynesian expansionary (or contractionary) activities. Romer (2001) argues that Ricardian equivalence has little practical value, at least in the short run, and is mainly interesting as a theoretical concept. This is partly because of the information problems described above, and partly because people do not seem to substitute between time periods in the way models of Ricardian equivalence predict.[5]

Other theories do not disregard fiscal policy, but argues for different ways of using it. One example is the theory of **expansionary fiscal contractions** – that a tightening of public finance can spur economic growth. By reforming public expenditure, usually by cutting taxes, the government may signal a more sustainable public finance, prompting

[4] Blanchard (2000), p. 540
[5] Romer (2001), p. p 540-41

higher confidence and increasing economic activity. This is mostly relevant when public finance is perceived to be unsustainable, and for rather large, structural adjustments. Eichengreen (1998) argues that the macroeconomic mechanisms function radically different when deficits are high; in this "non-Keynesian" range the well-known multiplier effect works in the other direction. In his model, a radical debt reduction in an indebted economy may cause a move from a high-debt, low GDP equilibrium to an equilibrium with higher GDP and lower debt.[6] Though most scholars would agree to such a separation, there could be wide disagreement on how adverse the situation would have to be for the theory to be relevant.

Several empirical studies argue for the existence of expansionary fiscal contractions. Giavazzo and Pagano (1990) identify two cases: Denmark and Ireland in the 1980s. Another study by the same authors from 1995 finds evidence of a contractionary fiscal expansion in Sweden in the early 1990s. Perotti (1999) identifies differences in the effects of fiscal policy in "good" and "bad" times, and argues that the difference is most pronounced following an increase in government spending. Hogan (2004) agrees with some of the conclusions, but argues that the effects are small and may not exceed the "traditional" contractionary effect of a fiscal tightening.

1.4 The selfish government

A third level of opposition to countercyclical policy concerns the way policy is carried out. Even though one accepts that cycles are adverse, and that policy, in theory, can help, traditional Keynesian theories can be criticized for having too much faith in policy-makers – both regarding their motives and their abilities. In addition to the well-known market failures that will flourish if the economy is left to itself, **government failures** can be highlighted, forcing a choice between two evils, rather than a simple solution to an externality problem.[7]

Theories on public choice and the influence of lobby groups has been around for some time, and have now been incorporated into a larger framework of political economics. In

---

[6] There is a simple and informative figure on page 258 of Eichengreen's comment. Another, less intuitive, figure on a similar case is found in Perotti (1999), p. 1409.

[7] Acocella (1998), p. xvi (preface)

the last quarter of the twentieth century, many theories have emerged studying the impacts of various policy rules and the need for the public to know the incentives of governments.[8] An increased scepticism towards the motives of policy-makers may lead to new insights in the way governments act. Policies need not be collectively rational; they may be the results of the pressure of lobby groups, or, more relevant in this case, short-sighted politicians may encourage public spending frenzies in an economic boom. Therefore, economists arguing against countercyclical policy need not necessarily denounce all the Keynesian reasoning. Even when agents have insufficient information or the wrong incentives, the benefits of collective decisions may be outweighed by the difficulty of getting policy-makers with incomplete information or dubious morale to act in an optimal way. This will be especially important in times of change, implying a less countercyclical attitude.

Alesina, Perotti, and Tavares (1996) study the relation between fiscal prudence and government popularity. They find that the popularity enjoyed by governments and their probability of survival does not depend on their fiscal stance. This could imply that re-election motivations are not crucial to explain an absence of reduced spending in good times. The authors suggest that hesitation to use contractionary fiscal policy could be motivated through other channels, such as the influence of public sector employees or government risk aversion.

A related topic is that of **fiscal discipline**. Theories on endogenous policy has emphasised the need for rules, to avoid excessive budget deficits and other suboptimal policies. Once deficits are established, they are hard to remove. [9] Bernheim (1989, p. 61) polemized against the "philosopher-kings" that assumingly controlled policy in Keynesian models. Kydland and Prescott (1977) argue that even though policy always maximises current and future welfare, time inconsistencies may lead to an overall suboptimal result.[10] They argue for consistent policy rules, such as constant tax rates, to avoid these distortions.

---

[8] Details can be found in Persson and Tabellini (2000), p. 2
[9] Romer (2001), p. 547
[10] Kydland and Prescott (1977), p. 487

Alesina and Perotti (1996b) claim that simple, numerical targets on budget deficits cause tax volatility and hinders transparent accounting, but nonetheless argue for some sort of spending controls, for example by voting on total budget size before discussing the budget composition. Deficit bias theories have been elaborated into more advanced political-economic models by, among others, Tornell and Lane (1999).

1.5 Some important trends

Above, some theoretical rationales for economic policy have been presented. The context in which policy is carried out is not constant. This section will address some issues connected to the economic and political environment of the last half of the twentieth century.

1.5.1 Public debt

The costs of increased public debt may be vague, and the public may have incomplete information on these, leading to an inefficiently high public consumption.[11] In the 1970s and 80s, debt finance was widely used; this is usually explained by pressure from lobby groups and insufficient information[12], as outlined in section 1.4. In the 1990s, most OECD countries seem to have realized that debt levels had to be stabilized.[13]
Figure 1 shows the evolution of public debt in the 20 countries studied. Changing debt levels may have affected the ability of governments to conduct fiscal policy, and strengthens the need to adjust for public debt when estimating the relationships.

[11] Romer (2001), p. 549 (partly referring to Buchanan and Wagner (1977))
[12] Acocella (1998), p. 336
[13] Blanchard (2000), p. 524. Figures are from the OECD Economic Outlook data (see appendix for full list of data sources).

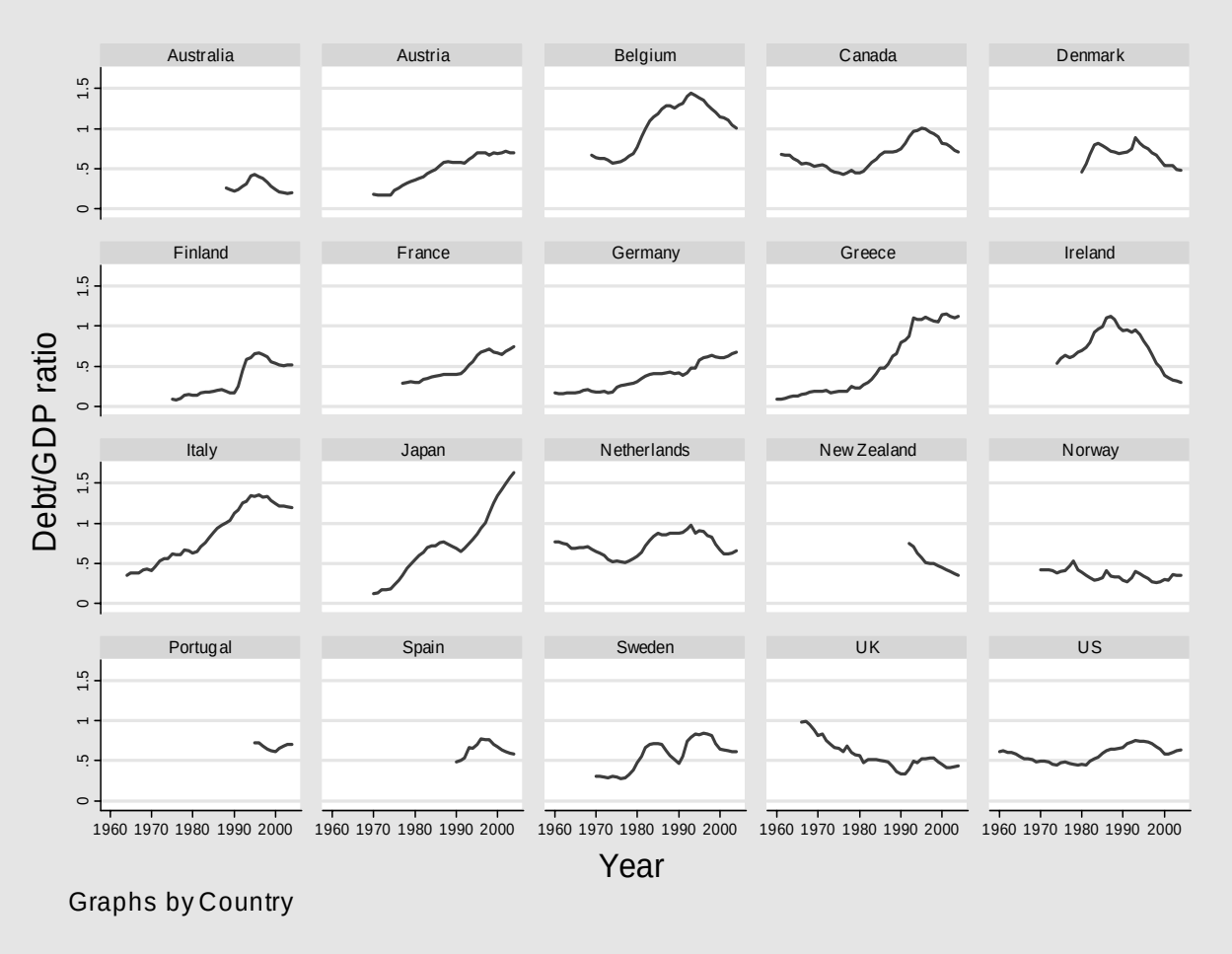

Figure 1: Evolution of gross public debt (debt/GDP ratio)

Since the 1980s, **capital markets** have undergone massive deregulation. This could work in both directions; governments have less control over the flows of value, limiting their ability to "command" state loans, while deregulation in other countries increases the ability to offer cross-border loans. I will assume that these effects are not too volatile, and do not constitute important short-run deviations. However, it may constitute a difference over time, and could therefore disturb attempts to discern time trends in other variables, such as the theoretical foundations of policy.

Government debt has a clear lender-borrower fundament, on which data is easily accessible. However, governments have other obligations than paying off their creditors.

A lot of government expenditure is tied up – not only this year, but in the years to come. **Pension obligations**, for example, may be large, and defaulting on these may be even less politically feasible than defaulting on public debt. Demographic changes of the kind typically experienced in Western countries, with a growing pensioner/worker-ratio, is an important influence in this context. Some obligations in actuarially "fair" systems may be recorded, but the main parts of pension obligations are still not tied to individuals in any way. These huge future obligations may not be as transparent at the time when policy is set, and may thus be less important than recorded debt in a policy-making perspective, but this is another factor that should be kept in mind when analyzing time trends.

1.5.2 Growth of the public sector

For the last fifty years, the relative size of government expenditure has increased as GDP has grown, as shown in Figure 2. One important reason for this is that social security is a normal good; as income goes up, people demand more social insurance, increasing government size.[14] It may also be the case that equity is a normal good, increasing demand for transfers as income increases. In addition, the increase in the division of labour, in particular the increase of women in the work force, has increased demand for services traditionally not supplied by the government, such as child care and care for the elderly. Technological development has also helped; people now live longer. The steady increase in government expenditure, however, came to an abrupt stop around 1985-1990. In many countries, this may be due to the relative collapse of the welfare state and the following reduction of public spending. While the causes of this will not be discussed in the thesis, an important implication of the steady growth of the public sector, and the later decline, is that the ratio of public spending can not be assumed to be constant over the time period. Allowances must be made for changing "trend" levels. I will return to this in the next chapter.

[14] Stiglitz (2000), p. 51

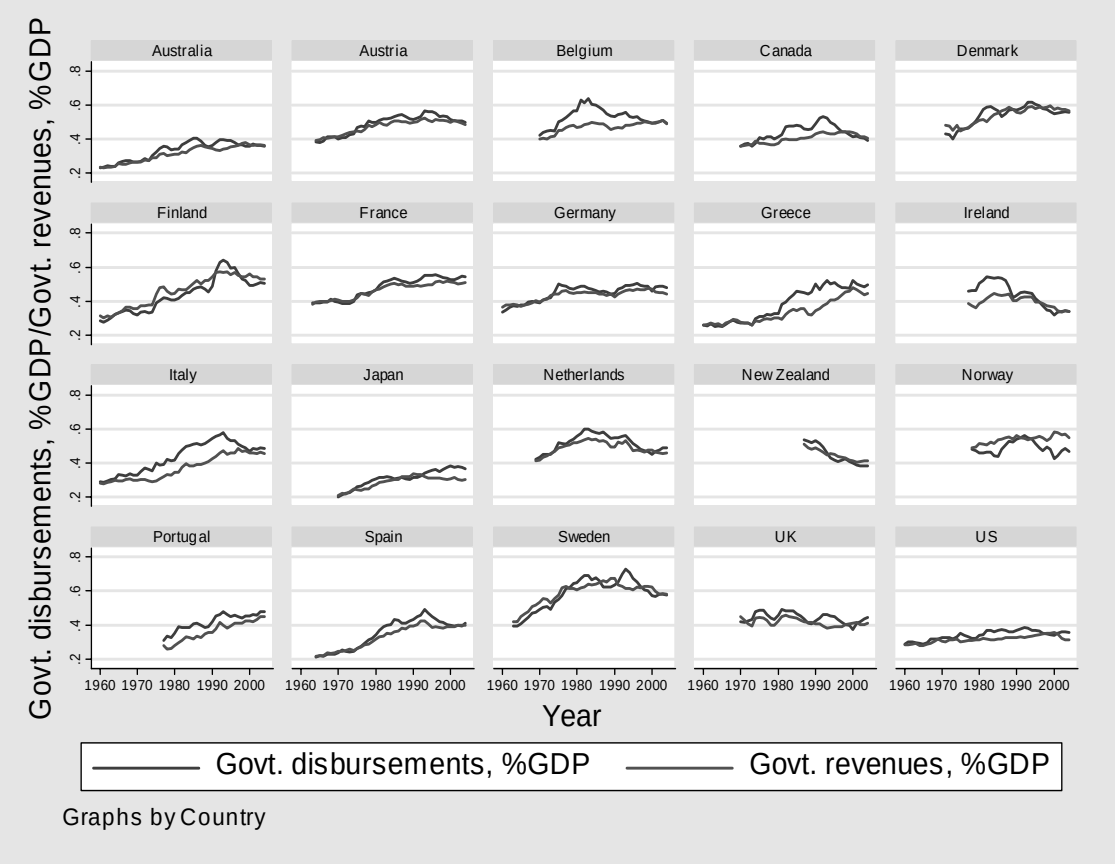

Figure 2: Evolution of gratio (disbursements/GDP) and tratio (revenues/GDP)

1.5.3 The Stability and Growth Pact

In 1999, the Euro was adopted in most of the (then) European Union countries. From this date, the monetary policy of the participating countries was conducted by the European Central Bank (ECB). An important part of the Monetary Union is the Stability and Growth Pact; this states that budget deficits shall not run below 3% of GDP.[15] Though the rule has been widely criticized and the implementation may have been inconsequential[16], it remains in effect, and could potentially have great impact on the ability to conduct fiscal policy. Provided that the sanction threats imposed by the EU are credible, there are now more limitations to the ability to run budget deficits in crises, and this could make countercyclical policy conductance harder.

[15] "The Stability and Growth Pact", European Commission Internet pages
[16] See, for example, De Grauwe (2003), p. 218

This push in the direction of less countercyclical policy may, however, be reversed by another important effect: as monetary policy is now conducted in a way assumed to be optimal for the entire Euro area, countries are left with only fiscal policy to solve their own problems. Several studies show that this effect has dominated[17], and that although fiscal policy in the Euro area is still countercyclical, it has become less so after the introduction of the Stability and Growth pact. As the Stability and Growth pact period comprises such a small part of the time period studied in this dissertation, the effects will not be considered when analyzing the relationships.

1.6 Summing up: Policy implications

Above I have given a sketch of what I label the traditional Keynesian justification for countercyclical fiscal policy, as well as three possible objections: that fluctuations are optimal, that policy cannot alleviate the problems and that policy cannot be carried out in an ideal way.

Classical theories emphasize the individual with its rational expectations, while Keynesian theory focuses on information problems among the same individuals, requiring government intervention. Defining policy-makers or even scholars into separate "schools" is an overt simplification, as most theories and opinions contain some forms of compromise. However, outlining the differences may be important for understanding the way these compromises are formed, and how much influence the theoretical "pure" arguments have.

For the rest of this dissertation, I will use the above mentioned classification of Keynesian opinions, referring to the traditional, governance-optimistic Keynesian framework, and the non-Keynesian objections seen in contrast to this.

1.6.1 Revealing government types

The primary scope of this dissertation is to try to look behind the actions of governments; of all these theoretical implications, what do they deem most important? As explained above, the name Keynesian will refer to agents who use countercyclical policy, because

[17] Galí and Perotti (2003), Marinheiro (2005)

they believe in Keynes, or the abilities of the government system, or both. If faced with a recession, these agents will tend to increase government expenditure or cut taxes to stimulate the economy. Equivalently, "procyclical" will refer to those who prefer not to act countercyclically; fiscal policy is rarely carried out in an entirely passive manner, and for the purpose of discerning the intentions this division is useful. Such a response could be motivated with theoretical arguments (reduced lifetime income, for example), with scepticism towards the possibilities of long-term planning, or by the fact that the decision-makers are the short-sighted politicians or bureaucrats some theories assume.

Hypothesis 1A: Governments are Keynesian; recessions are met with expansionary fiscal policy

Hypothesis 1B: Governments are procyclical; recessions do not lead to fiscal expansions

1.6.2 The government budget constraint

As mentioned above, governments do not have absolute liquidity constraints. Apart from the fact that money can be printed, governments in rich countries seldom have problems borrowing from private investors. Without this option, running countercyclical fiscal policy would be very hard. However, as debt increases the perceived chance of debt default may increase, and acquiring new debt becomes more expensive. The interest rates on existing debt also has to be paid, and becomes a significant part of public budgets. Thus, for countries with high public debt, the urge to spend more in recessions might be dampened by a lack of funds. As the debt grows, the probability of default becomes larger, and creates a pressure to reduce debt. This may cause the government to be more careful in fiscal expansions.

For this reason, the influence of the debt level should be tested, as this is an important constraint when conducting fiscal policy.

Hypothesis 2: Countries with a high debt/GDP ratio pursue a tighter fiscal policy

1.6.3 Decline of Keynesianism?

Traditional Keynesian economics, with its strong focus on demand, postulates an active role for the government. During the second half of the twentieth century, these theories have been both challenged by and reconciled with other theories of fluctuations. Emphasis on monetary policy, the re-emergence of classical theory and focus on political economy could all be interpreted as reducing the Keynesian faith in fiscal policy. Economic policy is not directly dictated by scientists. However, the fluctuations in the economic debate of the last half of the twentieth century are too large to be ignored. It should not be too dramatic to assume that at least some of this has spilled over to policy, and that intervention-sceptic theories, less well-regarded in the 1950s, now play more important roles. I will therefore, with a broad pencil, interpret the prevailing view of fiscal policy in the period 1960-2000 as a decreasing trend; while the faith in economic policy reached an all-time high in the 1950s, its influence has decreased ever since.

Hypothesis 3: During the course of the last half of the twentieth century, fiscal policy reflects a more governance-pessimistic trend; fiscal policy has become less countercyclical

1.6.4 Ideological differences: Do they belong to different faiths?

Are there any differences between the politicians? Do they act fundamentally different dependent on their political stance? As the classical lines of thoughts are explained above, it would not be too large a stretch to imagine that the theory is more popular among parties to the right of the political spectrum. The theory focuses on individual rationality, incorporates scepticism towards large government, and advocates against public spending in bad times. Indeed, the classical model is often perceived to be more popular among conservative political parties.[18] Keynesian thoughts, on the other hand, have in many European countries been associated with social democratic governments in the post-war years, and may fit well with their agenda: emphasis on public works, faith in a rational government and a broader definition of what constitutes public goods. Thus, it

[18] Burda and Wyplosz (2001), p. 406

would be of interest to see if conservative governments are less likely to use countercyclical policy than their social democratic counterparts.

Hypothesis 4: Governments with foundations to the left of the political spectrum are more likely to lead a Keynesian fiscal policy

2 Measuring fiscal policy

So far, I have used important parts of economic theory to lay out some hypotheses. This section will introduce the data with which the hypotheses will be tested, and the methods used to discern fiscal policy.

2.1 Issues in fiscal policy indication

2.1.1 Discretionary and induced revenues

The simplest indicator of the fiscal policy stance, and the one traditionally used, is the unadjusted budget balance; income minus expenditure. However, this number contains information that is not directly related to fiscal policy; large parts of the budget cannot be controlled by the government on a day-to-day basis. A situation where tax programs, health care and unemployment benefits were decided for one year at a time would provide too much uncertainty and is not a realistic image of how economies work. For this reason, some work has gone into defining good indicators of discretionary policies, defined as a sort of "conscious" expansion of the budget; an expansion that the government is able to control. To discern this conscious part, a division of expenditures and revenues into discretionary and induced parts is useful; if policy is unchanged, only induced parts should change. One way of doing this would be to go through the budget for all years and read the policy statements. While it might be more accurate, such an approach could easily be manipulated (detecting a bias is harder) and would be hard to compare across countries. For this reason, I will focus on numerical indicators that are constructed in a transparent manner, with data that is comparable between countries.

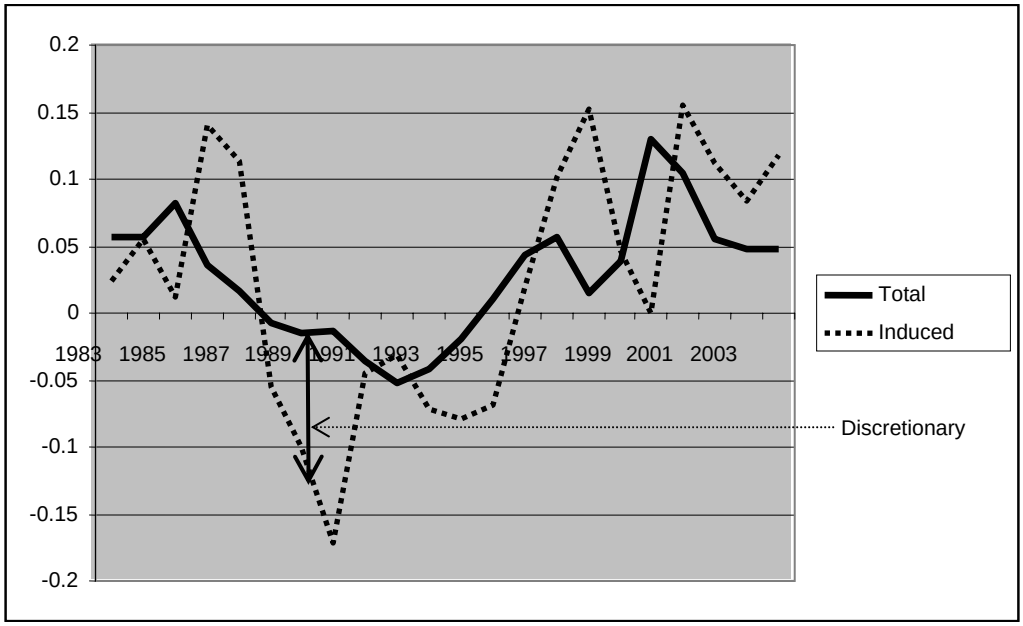

Figure 3: Total and induced budget balance. The discretionary balance is the distance between the lines[19]

There are several problems with constructing such an indicator. After all, the theoretical construction that one tries to discern is the *intention* of the government. The intention to perform a fiscal expansion may be hidden among a lot of other intentions, ranging over the entire spectrum of political activity, and a lot of tied-up parts of the budget. Decision-makers may have incomplete information, and the results may differ from the intended effects. For this reason, the best we can aim for is to see what parts of changes in public expenditures that, any given year, are the result of discretionary policy.

The indicators propose different ways to address this problem, and due to the different ways of constructing the numbers they often differ in times of economic crises, which is one reason why this dissertation devotes rather much attention to the various ways of indicating fiscal stance.

The main use of these indicators in the literature has been evaluation of conducted policies; this is natural, given that economists should be quite interested in how the real

[19] Data for Norway, using the discretionary budget balance as explained below.

world relates to their textbook models of fiscal policy. Some authors argue that the differences between the indicators are not of too great importance in this case[20]; I have not seen any clear documentation of this. In any case, the differences may lead to problems when using them as endogenous rather than exogenous variables; if, for example, unemployment is used to adjust tax revenues when compiling the indicator, unemployment could easily appear on both sides of the equality sign when running the regression. Therefore, it is of fundamental interest how the cyclical indicators of the economy affect the indicators; if the effects are direct, inaccuracies and measurement errors may be magnified. This is another reason for the following elaboration on the various ways of indicating the fiscal stance.

2.1.2 Level or change?

The number resulting from a one-dimensional fiscal indicator is either a flow term or an acceleration term, or, more precisely, the indicator measures either the level of spending (change in public debt) or the change in the level of spending (change in the change in public debt). Whether fiscal policy should be described as a level or a change depends on the model one are referring to; in a model with permanent effects of fiscal policy, a level indicator would be correct, whereas one would prefer a change indicator if one believed the effect was temporary. As this thesis does not aim to present one specific macroeconomic model, I will not focus too much on this, but these facts will be kept in mind.

When considering expansions that take place over the course of several years, the level indicators may have an advantage; change indicators would then only show an expansion in the first year. In addition, change indicators will show expansions followed by contractions if discretionary spending returns to its previous value. Level indicators come, however, at a price: the need to define a base year – a year that has a "normal" budget. As government expenditure itself has changed during the period (all of these changes can hardly be said to be discretional), the choice of base year may affect the measure. Change indicators simply take the previous year as the benchmark year,

[20] See, for example, Alesina and Perotti (1995), p. 215

avoiding this problem, although the period over which the change is measured (usually one year) may be said to be arbitrary, and influence the conclusions.

As I assume the fiscal indicators used in this thesis have been constructed to deal with the above problems in the best possible way, I will not interfere with the authors' choice between level and change, except in the case of the OECD indicator, where both measures have been used officially by the OECD.[21] The measures will be used as indicators of fiscal stance, and incorporated in my model in the same way.[22]

2.1.3 Decomposing GDP

Indicators have varying degrees of complexity. In this paragraph I will present a separation of revenues and expenses that will prove useful. The separation is in accordance with the way OECD organizes its data, and thus has the advantage of being easily accessible. Identifying which parts of revenues and expenditures that are discretionary is a central part of determining the fiscal policy stance. The composition is summarized below, with abbreviations taken from the OECD Economic Outlook for easy reference.

Revenues and expenditures are decomposed as shown in Figures 4 and 5.

<table>
<tr><td rowspan="7">YRGT: Total revenues</td><td rowspan="6">YRG: Total revenues, excluding capital</td><td>TYH: Total direct taxes, households</td></tr>
<tr><td>TYB: Total direct taxes, business</td></tr>
<tr><td>TIND: Indirect taxes</td></tr>
<tr><td>SSRG: Social security contributions received</td></tr>
<tr><td>TOCR: Other current receipts received</td></tr>
<tr><td>YPERG: Property income received</td></tr>
<tr><td colspan="2">TKTRG: Capital tax and transfer receipts</td></tr>
</table>

Figure 4: Composition of public revenues

[21] Blanchard (1990), p. 5

[22] Galí and Perotti (2003, p. 543) have a similar argument about not making a "final" choice between level and change indicators.

<table>
<tr><td rowspan="8">YPGT: Total expenditure</td><td rowspan="6">YPG: Total expenditure, excluding capital</td><td colspan="2">CGW: Government wages</td></tr>
<tr><td colspan="2">CGNW: Non-wage public consumption</td></tr>
<tr><td colspan="2">YPEPG: Property income paid by government</td></tr>
<tr><td colspan="2">TSUB: Subsidies</td></tr>
<tr><td rowspan="2">SSPG: Social security paid by government</td><td>UB: Unemployment benefits[23]</td></tr>
<tr><td>Other social security paid</td></tr>
<tr><td colspan="2">TOCP: Other current payments</td></tr>
<tr><td colspan="3">IG: Public investment</td></tr>
<tr><td colspan="3">(TKPG – CFKG): Capital transfers/payments minus government consumption of fixed capital</td></tr>
</table>

Figure 5: Composition of public expenditure

This decomposition is a good summary of the possible complexity of calculations, and it will be my reference point when dealing with some of the indicators. The data sources used are summarised in Appendix B.

Even if indicators were fine-tuned to infer all thoughts of policy-makers from economic data, some disturbance would still exist. I here give some limitations which the methods used in this dissertation fail to address.

One problem is that of time inconsistencies. Decisions that are taken one year are not necessarily effectuated the next year only; there may be delays, or the project may be large enough to last for several years. While an ideal approach could consider the decisions and not the results, I do not see how this could be done with a transparent, numeric procedure.

Another issue is that public finance leaves room for some creative accounting. Though government budgets represent the actual financial situation pretty well, there are still some loopholes that some governments may be tempted to use. To mask deficits, property may be sold.[24] Though an elimination of these effects has been attempted when constructed the indicators (capital revenues and expenditures are excluded from most of them), there could still be ways to do this, and this could be the case more often in years of large deficit. Therefore, a small bias may exist. There are also other ways to reduce deficits, such as devaluing property without exposing it to the market, as Portugal did

[23] The division of SSPG into UB and "other" is not in the OECD Economic Outlook data. For a complete list of sources, see the appendix.

[24] Romer (2001), p. 533

with its gold reserve in 1980[25], or trying to push the bill on future generations. A switch to using capital as a basis for public budgets has been proposed. This would not count purchase of long-lasting capital equipment as expenditures, only the depreciation. However, the measurement problems related to such an approach would be quite large.[26] In some countries, large expansions may be undertaken through state-owned firms running large projects; this would not be included if one only looks at public expenditure. Such a factor is hard to adjust for, as it could vary greatly between countries.[27]

2.2 The fiscal indicators

This section presents a range of fiscal indicators. As the quantitative results of this thesis are quite sensitive to the choice of indicator, a careful presentation is deemed necessary.[28]

2.2.1 The primary balance

The easiest and most natural measure of fiscal stance is the primary balance – government revenues minus government expenditure excluding interest payments. Using this as a measure has the obvious advantage of simplicity and transparency. However, the issue of whether changes are discretionary or induced is not addressed, and therefore this is only useful if one wants to include automatic stabilizers.

For reference, the calculation (based on the OECD data) is:

$$bal_t^r = \frac{BALPRIM_t}{GDP_t}$$

`BALPRIM` is the primary balance, taken from the OECD data. The primary balance is government revenues minus government expenditures minus net interest payments. The indicator `balr` measures the change in net government debt.

Alternatively, one can look at the change in this level, obtaining an index of the change in the deficit:

$$\Delta bal_t^r = \frac{BALPRIM_t}{GDP_t} - \frac{BALPRIM_{t-1}}{GDP_{t-1}}$$

[25] Giavazzi (1995), p. 241
[26] Gramlich (1989), p. 26
[27] Choraqui et al. (1990), p.4
[28] This section was initially inspired by a brief survey in Alesina and Perotti (1995), pp. 212-214

With these definitions, the `balr` (real balance) and `dbalr` (difference in real balance) indicators indicate, respectively, the relative budget balance and the relative change in the budget balance.

2.2.2 The cyclically adjusted balance

The measure advocated by the OECD is the cyclically adjusted budget balance, CAB. The calculation of the cyclical component of the budget balance can be summarized this way[29]:

- The effects (that is, elasticities) of changes in output on tax income and expenditure are estimated.
- On the basis of a theoretical model of the economy, country-specific production functions are constructed.

These two components are then combined to find the cyclical component of the budget.[30] From this the cyclically-adjusted budget balance may be found. It is summarized by van den Noord (2000) as "the general government net borrowing or lending that would take place if the economy were operating at potential".

The CAB has been criticized for several reasons. According to Blanchard (1990), the CAB deals with issues that are "difficult, controversial, and completely irrelevant for the question at hand"[31]. The construction of potential output based on production functions is largely theoretical and will not always be correct. In addition, the use of elasticities of components relative to the entire output does not take into account changes in GDP composition. Finally, some criticism of the CAB concerns issues not relevant in my use of indicators, namely its (mis)use to indicate the sustainability of fiscal policy, its impact on aggregate demand and the effect on GDP composition[32].

Despite the criticism of the CAB, it remains an established measure of the policy stance, and, unlike other indicators, it can be given as a level measure. I will consider both the (scaled) value of the CAB in a given year, and the change from the year before, in accordance with the discussion in section 2.1.2.

---

[29] van den Noord (2000), p. 5
[30] A calculation of the cyclical component is given in Appendix A.
[31] Blanchard (1990), p. 6
[32] Choraqui et al. (1990), p. 3

The OECD measure is also, with some minor adjustments, used by the IMF[33] and the European Commission.[34]

The CAB is scaled according to GDP in the same way as the balance:

$$cab_t^r = \frac{CAB_t}{GDP_t}$$

$$\Delta cab_t^r = \frac{CAB_t}{GDP_t} - \frac{CAB_{t-1}}{GDP_{t-1}}$$

The interpretation of the values are, similar to the balance indicators, that the `cabr` measure gives the relative, cyclically-adjusted, budget deficit, while the `dcabr` measure gives the change in this value.[35] As for most of the remaining indicators, the values can be assumed to be lower than for the real balance, as automatic stabilizers are supposedly removed from the calculation.

2.2.3 Blanchard's Fiscal Impulse

Blanchard (1990) presents a new way of indicating fiscal policy, designed to avoid the problems with the CAB. His "indicator of discretionary change" is calculated as the change in the budget balance (from one year to another) that would have been observed if unemployment had not changed.[36]

Trend paths for taxes and transfers, adjusted for unemployment, are calculated and are used to correct the simple budget balance measure. Thus, some modelling is done, but the definition of "natural output" used in the CAB is avoided. The calculation of the Blanchard Fiscal Impulse used in this dissertation is given in Appendix A, and can be summarized as

$$\widetilde{BFI}_t = \Delta gp_t - \Delta gr_t - s\Delta U_t$$

where *gp* is government disbursements, *gr* is government revenues (both as shares of GDP and without interest payments and receipts) and *s* is a cyclical correction incorporating the changes in public budgets due to varying unemployment levels.

---

[33] Alesina and Perotti (1995), p. 213
[34] Galí and Perotti (2003), p. 544
[35] The values in the OECD Economic Outlook data are in percent. The values used in my calculations are divided by 100 to get the relative numbers (100%=1) to be consistent with the other indicators.
[36] Blanchard (1990), p. 12

For consistence with the other indicators, an opposite scaling of the indicator will be used in this thesis:

$$BFI_t = -B\widetilde{FI}_t$$

measuring the adjusted budget deficit size instead of the "expansionary-ness" of policy. Blanchard's Fiscal Impulse, (abbreviated as `bfi` for the remainder of this thesis) should also be expected to have a smaller volatility than the primary balance. This is the case, but just barely; in some cases, the adjustment actually leads to larger volatility (and larger outlier values) in predicted discretionary policy than in the unadjusted balance.

2.2.4 Holden-Braconier indicator

The definition proposed by Braconier and Holden (1999) and refined in Holden (2005) does, as the other indicators, set out to calculate the induced part of tax and expenditure changes; the part of public income and expenditures that is not directly affected by policy.

When constructing the indicator, certain parts of the public budget are assumed not to be used in discretionary fiscal policy, as shown in Figure 6. The reasoning behind this is that capital revenues and expenditures are not controlled by the government on a year-to-year basis.

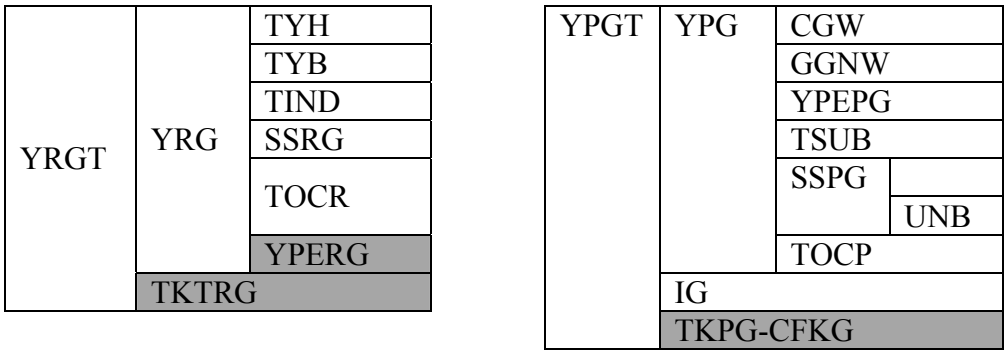

Figure 6: Controllable and non-controllable components. Controllable components are shown in white

Induced **revenues** are expected to grow proportional to the tax base. If T denotes total income and Z total activity, this means that

$$\frac{\Delta T^I}{T^I} = \frac{\Delta Z}{Z}$$

Using time and group subscripts, this can be reformulated as

$$\Delta T^{I}{}_{i,t} = T^{I}{}_{i,t-1} \cdot \left(\frac{Z_{i,t}}{Z_{i,t-1}} - 1 \right)$$

Using a decomposed version of this formula, the induced change in revenues is calculated (See Appendix A for a full explanation). The discretionary change in revenues is then calculated as the residual:

$$\Delta T_t^D = \Delta T_t^{observed} - \Delta T_t^I$$

The scaled indicator of discretionary policy then becomes

$$\Delta t_t^D = \frac{\Delta T_t^D}{Y_t}.$$

The Holden-Braconier indicator uses a decomposed version of GDP, aiming for greater accuracy. Changes in discretionary policy may also be calculated for parts of the budget, such as household taxes, enabling a more detailed analysis. However, this attempted accuracy is also one reason to be critical; in particular, the data on the tax bases and the assumptions of their growth may not be a perfect fit, and, as mentioned above, measurement errors in the cyclical indicators (most notably unemployment) could be magnified as these are also included in the fiscal policy indicator.

The calculation of the **expenditure side** is slightly different than the revenue side, due to the nature of unemployment benefits. The induced unemployment benefit expenditure (as a share of trend GDP) is assumed to fluctuate with the unemployment rate, while other expenditures fluctuate with total production. The calculation procedure is explained in Appendix A. Having calculated the induced change in expenditure for unemployment benefits and "other" expenditure, the discretionary change can be found:

$$\Delta G_t^D = \Delta G_t^{observed} - \Delta G_t^{I,unempl} - \Delta G_t^{I,other}$$

and scaled:

$$\Delta g_t^D = \frac{\Delta G_t^D}{Y_t}$$

The situation in this case is, as for the Blanchard indicator, that unemployment actually is a part of the indicator. Any correlation between the indicator and unemployment

therefore has to be examined with special care. As discussed in section 2.1.1 above, one consequence of this may be an increase in possible measurement errors.

The calculated change in the discretionary **budget balance**, which is the Holden-Braconier indicator of expansionary fiscal policy, is simply the difference between the two indicators:

$$\Delta b_t^D = \Delta t_t^D - \Delta g_t^D$$

This change should, in theory, be "cleaned" of the effects of automatic stabilization. The Holden-Braconier indicator, abbreviated as `dbd` for the remainder of the thesis, shows more variation than the other change indicators.

2.2.5 The discretionary budget balance

In this paragraph I will try to develop a level indicator. This is partially an extension of the Holden-Braconier indicator, with three clear objectives: Trying to remove unemployment from entering directly into the calculation, not having to rely on too many data sources, and getting an indicator in level form. The basic way of solving this is to divide the budget components into discretionary and non-discretionary parts; instead of de-trending growth in some variables, I choose to assume that some parts of the budget can serve as indicators of discretionary policy.

I simplify the **expenditure calculation** by assuming that the entire automatic stabilizer effect is part of the social security expenditures. When an expansive fiscal policy is conducted, it is unlikely that it will be done in such a way as to increase social security expenditure, as the target of the expansion is increased economic activity. For fiscal contractions the picture may be a bit more clouded, but I still think it is a reasonable assumption. The part of the budget that may be used for expansionary policy is thus

$$G^{other} = (YPG + IG) - SSPG$$

subtracting SSPG from the G used in the Holden-Braconier indicator.[37]

[37] It is thus assumed that CGW, CGNW, YPEPG, TSUB, TOCP and IG are controlled by the government, and not part of the automatic stabilizers. In the following calculation, G refers to this entity.

Then, I calculate a "normal" level of public expenditure, using the previous five years as base years. The choice of moving base year makes comparison between countries easier, but has two drawbacks: The loss of the first five observations and a certain inaccuracy as five years is not enough. The choice of a five-year base period is chosen as a balance between these two issues.

The calculation of the indicator is done by postulating a "trend" or induced level of public expenditure, as shown in Appendix A. The relative difference between this trend level and the actual level of public expenditure (for the parts of the budget defined above) thus constitutes the discretionary policy level in a given year:

$$g^D = \frac{G^{observed} - G^{trend}}{G^{trend}}$$

An aggregated **revenue indicator** can be constructed in the same way as the expenditure indicator. When considering revenues, however, assuming a constant tax rate is more appropriate than assuming a constant tax income level.

I will develop two ways of calculating discretionary revenues, with their separate advantages. In the most straightforward version, roughly the same share of GDP as for revenues is considered:

$$T^{other} = (YRG - YPERG) - SSRG$$ [38]

This is then combined with total GDP to infer the overall tax rate of the economy

$$\tau = \frac{T}{GDP}$$

and the trend variable for this is constructed, as described in the appendix, and multiplied by total GDP to get induced (trend) revenues. Then, the deviation is calculated:

$$t^D = \frac{T^{observed} - T^{trend}}{T^{trend}}$$

For a closer resemblance to the Holden-Braconier indicator, and the possibility of a more detailed decomposition, I have also devised a more complex indicator. This is calculated by generating a "tax policy regime", using the same division as in the Holden-Braconier

[38] The discretionary revenue (called T from now on) is thus postulated to consist of TYH, TYB, TIND and TOCR.

indicator, by dividing tax income in each sector by its tax base (see Appendix A for a full description). The tax rate for the five preceding years is then used to calculate a trend tax rate system, and this tax system, used on this year's tax bases, constitutes induced public income. Discretionary policy is then computed as the deviation from trend.

$$t_c^D = \frac{T_C^{observed} - T_C^{trend}}{T_C^{trend}}$$

The correlation between the two revenue indicators is approximately .91 for the data used in this dissertation. Why, then, stay with two ways of calculating discretionary revenues? The advantage of the complex calculation is that it includes more information. Tax base data is utilized, aiming for more accuracy. However, this may also be a drawback; the simple calculation relies only on aggregated income and expenditure data, and has a more transparent calculation. I will return to an evaluation of the different indicators below.

The total **budget balance** is calculated as for Holden-Braconier, that is

$$b^D = t^D - g^D$$

and, for the complex way of calculating discretionary revenues

$$b_c^D = t_c^D - g^D$$

When abbreviated, `bd` and `bdc` will be used for these indicators in the rest of this thesis. The values are slightly more volatile than the balance (both unadjusted and cyclically-adjusted) as only parts of the budgets are included.

2.2.6 Relations between the fiscal indicators

As shown above, the indicators use different approaches to separate discretionary and induced revenues. The OECD indicator (CAB) assumes the induced balance to change according to estimated effects when output deviates from potential. Blanchard's Fiscal Impulse (`bfi`) gives induced effects that fluctuate with unemployment. The Holden-Braconier indicator (`dbd`) assumes that proportional growth in tax bases and tax income gives induced revenues, while a constant disbursement/GDP ratio gives induced expenditures if cyclically corrected. The discretionary budget balance calculation gives the induced balance to be the balance that would follow from trend tax rates and expenditures for parts of the budget not related to social security.

To discuss some of the differences between the indicators, I will outline some possible effects of a recession and what the indicators say about the expected induced changes.

The CAB, with an emphasis on potential output, will react in different ways depending on the estimation of potential output. Compared to regular "demand" shocks, a "supply-side" shock also lowers potential output will affect the OECD measure comparatively less, giving little cyclical adjustment. If the automatic stabilisers do not differentiate between these kinds of shocks, and adjust according to increased unemployment, the CAB could characterise a larger part of the response as discretionary than the other indicators. Blanchard's Fiscal Impulse, on the other hand, is exclusively unemployment-oriented. This could lead to an over-adjustment in times of high trend unemployment, characterising a larger part of the budget as induced.
The Holden-Braconier indicator uses both information on unemployment and the cycle (tax bases), and thereby tries to balance these issues. The discretionary budget balance, by using trends, tries to avoid some of the problems, but the trending used gives an under-sensivity to "slow" cycles; after five years of output below trend, the `bd` (and `bdc`) would have adjusted, gradually removing the cyclical adjustment and expanding the discretionary part.

An economic shock also has effects on the composition of the economy. Unemployment benefits increase in recessions, but other benefits, such as sick leave, may also increase. The calculations of induced spending will differ; Blanchard and Holden-Braconier would classify such a change as a discretionary increase in government spending, while the discretionary budget balance has explicitly removed social security from the calculation. Many other sector-limited shocks would presumably be handled more accurately by the decomposition methods used by the `dbd` and `bdc`; as mentioned above, the OECD indicator can be criticised for estimating responses to fluctuations in aggregate GDP. A similar argument can be made against the `bfi` and `bd` constructions.

I will return to this issue, and the effects on the overall estimations, in chapter 3. The indicators diverge in their classification of responses to changes in the economy, the reason for why I include all of them in this thesis.

A table of the correlations between the indicators may be found in the appendix. Correlations show a wide range; for example, Blanchard's Fiscal Impulse is almost perfectly correlated with the primary balance (.96) while the discretionary budget balance and the CAB hardly show correlation at all (.02). Figure 7 shows the fluctuations of the different indicators for one of the countries in the sample.

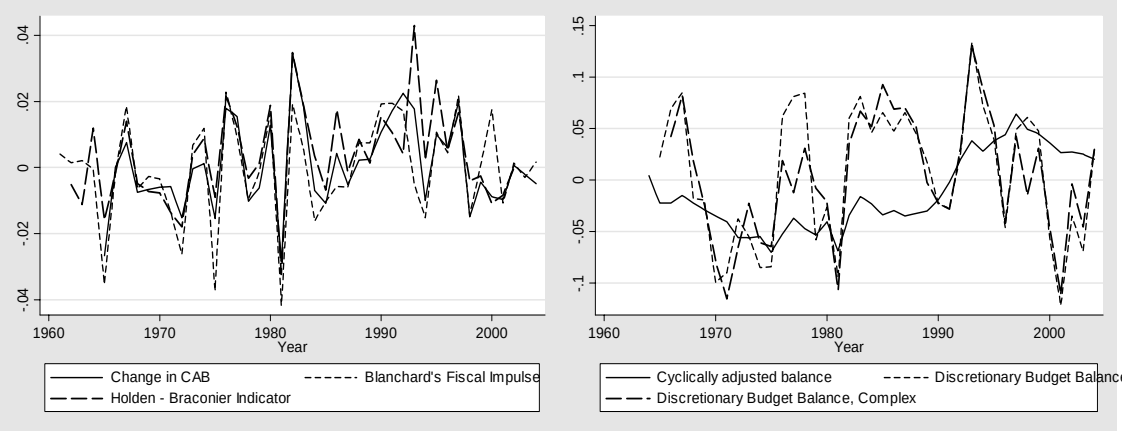

Figure 7: Examples of fluctuations of fiscal indicators (Italy, 1960-2004)

2.3 Economic and political environment

2.3.1 Defining the business cycle

Estimating if the economy is in recession or boom is, naturally, a central part of economics. The choices are not as many here as for the fiscal indicators, so the discussion will be a bit briefer, but the choice is still important. Below follows a brief summary of the two measures that are most frequently used: unemployment and output gap.

Though using **unemployment** as a cyclical indicator has some limitations, notably an unclear relation to total production and large differences between countries, the advantages offered possibly outweighs this. Most important is the fact that

unemployment can be assumed to be known to governments at any given time, being an important motivation for unemployment-reducing policy. Also, while "growth" may be an abstract concept in the short run and is neutral with respect to distributional issues, low unemployment usually means greater equity and an improvement also in the short run. Unemployment statistics may be incomplete in some countries, as people stop looking for labour or drift into the "black" economy. The black economy is, however, an issue for all indicators and not only limited to measuring of unemployment.

The **output gap** (GDP gap) measure used by the OECD is meant to give an indication of the current stance of the economy. A natural level of activity is estimated; what output would have been given some "natural" state.[39] A lot of calculation goes into the indicator, of which little will be reproduced here.[40] Among the variables included are the size of the government and private sectors, the total number of hours worked, an estimate of productivity, the stock of capital and the size of the potential work force. Another vital variable is the NAWRU, the "natural unemployment rate" that is consistent with a theoretical economic equilibrium.
When the natural output level is found, the GDP gap is calculated as the difference between observed and natural output. The GDP gap measure is advanced, and is assumed to give a good indication of the state of the economy. This comes at the price of reduced transparency; the calculation of the GDP gap is complicated, and the indicator may not be known to the authorities when they set policy.

When indicating the cyclical stance, I aim to balance the transparency of unemployment with some of the theoretical foundations of the output gap measure. As labour markets differ widely across countries, unemployment data will be normalized using the natural level, the NAWRU. As the right-hand side of the equations (the fiscal indicators) are quite elaborated, simplicity on the right-hand side will make the interpretations of the results a bit more straightforward.

---

[39] Though the concepts are not entirely separate, the "natural" output level used in the GDP gap calculation is not equivalent to the "natural" output mentioned when discussing Keynesian and classicist theory. The OECD definition has a more empirical approach.
[40] The OECD GDP gap calculation may be found in its entirety in Giorno et. al. (1995)

The cyclical measure used thus becomes

$$U_{gap} = U - NAWRU$$

A table of correlations between the cyclical indicators and between the cyclical indicators and the fiscal indicators is given in the appendix. The unemployment gap is placed "between" the unemployment rate and the output gap, showing the highest correlation with both.

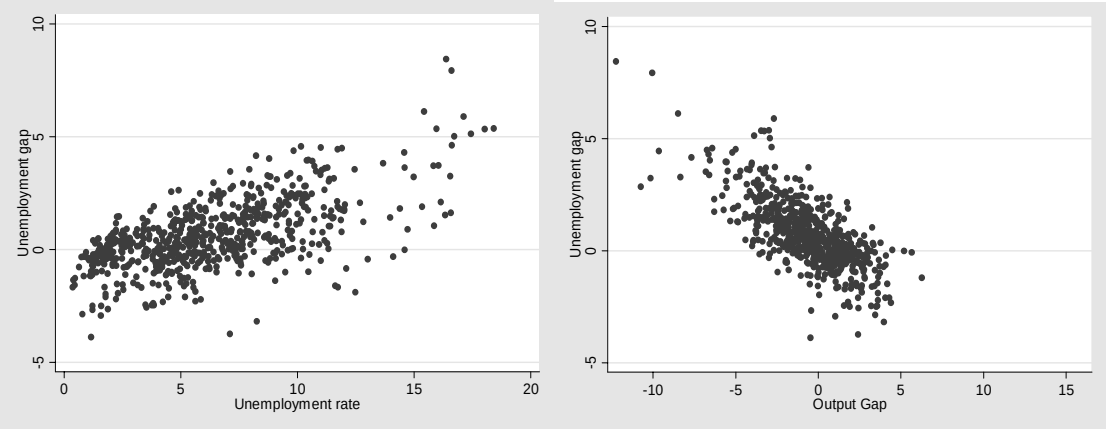

Figure 8: Comparing cyclical indicators

2.3.2 Assessing the political stance

Data on the political stance of governments is taken from a data set compiled by Michael McDonald and Silvia Mendes.[41] The data set contains a wide range of data on the strength and position of governments in key Western countries from the early 1950s to 1995. Care should of course be taken when compressing thoughts into a left-right scale this way. Though the data appears to be thoroughly researched, I have checked it against two other political data sources (Swank and Ardagna) that are calculated in a less efficient way[42] and found correlations of .75 and .65. Comparisons between the indicators are also presented below. I find the agreement between the indicators satisfactory.

---

[41] Available from http://www.binghamton.edu/polsci/research/mcdonalddata.htm

[42] Both data sets classify parties as "right", "center", or "left", while McDonald / Mendes use a continuous scale. The GOVLR3 indicator is compared with the following: The Swank indicator was created by subtracting the share of "left" parties in government from the "right" ones (rightg – leftg). In the Ardagna data the indicator cpg was used. See appendix for source list.

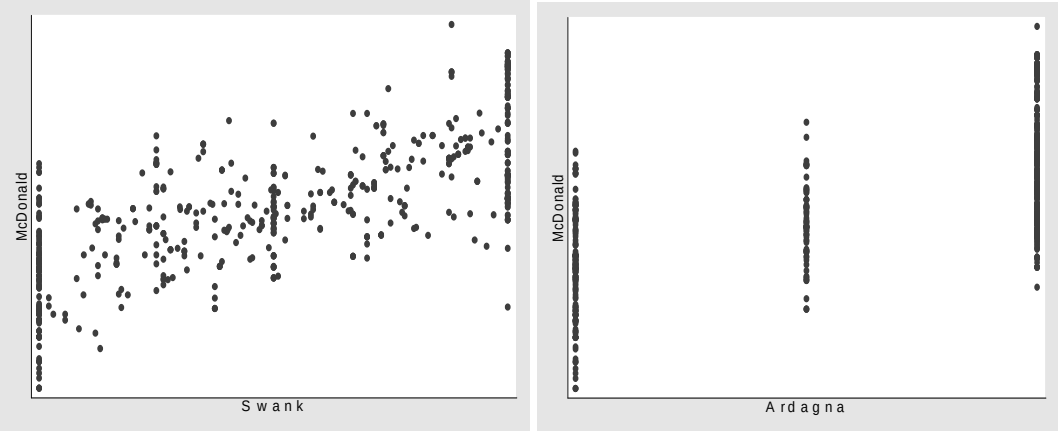

Figure 9: Comparing political data

The data file is grouped by government, so some work has gone into converting it to compatible country-year format.[43] In years with several governments in office, a weighted average of the values has been used, based on the parties holding office at the end of each month. Some short-lived governments do not have indicators of political stance; in these cases, the average of the months with known values is used.

The variables of relevance for this thesis are

Government position: I have chosen to use the variable McDonald and Mendes call `GOVLR3`. This gives the left-right position of the government currently in power on a theoretical scale from -100 (left) to 100 (right); the lowest and highest observations are -36 and 46, respectively. This number is based on information in Budge et al. (2001), giving the policy stance of political parties based on their election manifestos, using mean values for coalition governments (each party is weighted by the number of posts they control[44]). The indicator is calculated using a three-election average where data is available.[45] Figure 10 shows the measured political range of the different governments in the countries studied.

Government strength: The indicator used for this will be the ratio of parliament seats the governing parties hold. This is called `GOVSPCT` in the data set (`GPSPCT` in the explanations in the codebook).

[43] Excel macro available on request.
[44] Budge et al (2001), p. 166
[45] This is explained in the codebook to the McDonald / Mendes data.

Data for Japan and Greece are not available, while Spain and Portugal only have data from after democratisation in the 1970s. The data set covers observations up to 1995, giving a total of 611 observations.

Figure 10 gives the range of the left-right specification of the various countries according to the McDonald / Mendes data.

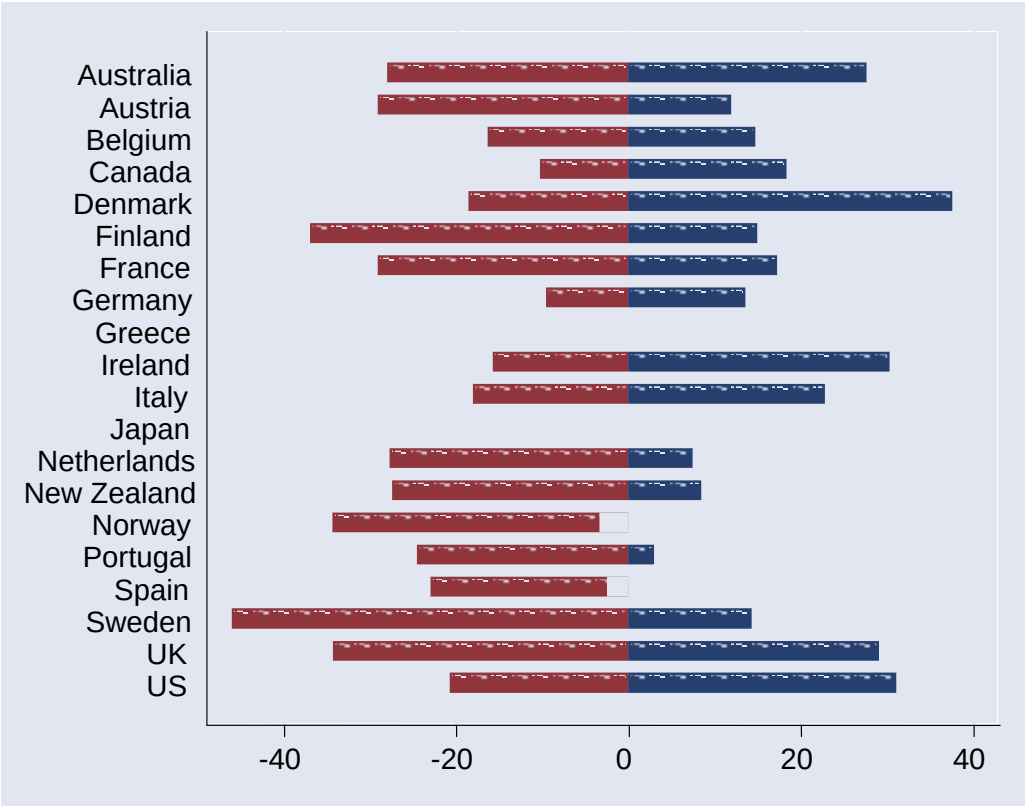

Figure 10: Range of left-right specification, by country

3 Looking for Answers

Having presented my hypotheses and the data to be used in testing, it is now time to confront reality. The data I use (T=44, N=20) presents a rather wide and long panel, and I will begin this section with a discussion of the panel data estimation methods available.

3.1 Choice of estimation

3.1.1 The baseline model

The postulated relation between fiscal stance, cyclical situation and debt will be

$$F_{i,t} = \alpha + \beta U_{i,t-1} + \gamma Z_{i,t-1} + \varepsilon_{it}$$

where

- F is the discretionary fiscal stance, calculated by one of the indicators described in Part Two
- U is unemployment (adjusted using NAWRU, as specified in section 2.3.1) used as a cyclical indicator
- Z is the ratio of government debt to GDP.

The exogenous variables chosen are the ones deemed most necessary; the theoretical framework used in this dissertation does not justify any other right-hand-side variables. Though other relations are probably present, they are beyond the scope of this thesis and may be hard to quantify.

Initially, I will assume that the effects on fiscal policy are the same in all countries over the entire time period. As this assumption has some drawbacks, as will be explained below, separate regressions for countries and decades will also be run. These separate regressions are also interesting when studying differences between countries and time periods.

I have chosen to use the **lagged values** of the exogenous variables in the regressions. This means that policy in time t is assumed to be affected by the state of the economy in time

t-1. This fits well with the fact that making decisions and carrying them out takes some time; one year may be a good approximation of this. Using the lagged values of the exogenous variables can also help alleviate a possible causality problem. When looking at the data for the same year, it is hard to know whether the fiscal policy is the result of the economic situation or if the economic situation is a result of fiscal policy. By using lagged values of the economic situation, some of this problem is avoided, though forecasts for t+1 may still be an input to decision makers in time t.[46] These forecasts, however, will be based on the situation in time t, and thus the lagging of variables should provide a reliable way of ensuring the correct causality.

3.1.2 Previous results

Though there is an abundance of works on ways fiscal policy works, and how it affects the economy, this is not the case when considering the effects of cyclical variation on fiscal policy. I have only found a few related results: Galí (2004), using the cyclically adjusted balance, finds that fiscal policy is systematically countercyclical, and has become increasingly more so. This point is also made in Galí and Perotti (2003). Fatás and Mihov (2001) discuss effects of cyclical variation on various fiscal variables, but do not use any explicit fiscal indicator. They find that the primary balance is countercyclical. Braconier and Holden (1999) examine effects on public finance (budget surpluses and deficits) of cyclical variations if fiscal policy is held constant, and find that the sensivity varies some within the Nordic countries.

Below, I will discuss some of the methods used in previous works, to find an appropriate way of estimating the relationships.

3.1.3 Pooling data: Choosing the appropriate estimator

Initially, I will assume that the effects on fiscal policy are the same in all countries. An argument can be made that this restriction may lead to biased estimators[47] as it is hard to test if equal slopes are present in the "true" case. For this reason, some works on the topic of fiscal adjustments, such as Hogan (2004) use an average of country-specific slope

---

[46] Kennedy (2003), p. 74-75
[47] Pesaran and Smith (1995), p. 80, Kennedy (2003), p. 311.

estimates. However, using only separate estimations (as I will do later to look at country-specific effects) uses less information to produce the estimate. I will give these efficiency gains the most attention, and, in accordance with Baltagi et al (2000) and Attanasio et al (2000) estimate using all the data. This is by no means a unique approach in these kinds of works; it is used, for example, in Fatás and Mihov (2001).

The characteristics of the various *t* and *i* groups can be incorporated in various ways.[48] It is beyond the scope of this thesis to formulate any explicit model of the causes of various fiscal actions in different countries and years. For this reason, I choose to represent the groups by dummy variables, rather than by variables constructed from indicators of institutional structure, development and other such factors. In the case of country dummies, this is equivalent to the fixed effects estimator.[49] The inclusion of year dummies as well generates another "layer" of controls; thus, effects only caused by the passage of time should be removed. Some degrees of freedom are lost, but the observations are numerous enough to justify this. Any remaining significant results should now be a good indicator of the true relation, despite the possibility of a small bias as indicated above.

The equation to be estimated with regular OLS thus becomes[50]

$$F_{i,t} = \alpha + \beta U_{i,t-1} + \gamma Z_{i,t-1} + \phi_{1960} D_{1960} + \ldots + \phi_{2003} D_{2003} + \varphi_{Austria} D_{Austria} + \ldots + \varphi_{UK} D_{UK} + \varepsilon_{it}$$

A common choice when conducting panel data estimates is between this **fixed effects estimator** and the **random effects estimator**. I have chosen the fixed effects estimator here for several reasons. First, the groups can be said to be "complete"; the sample includes most of the countries that have been members of the OECD for the entire time period. One of the advantages of the random effects model is most prominent when the groups used are chosen as "samples" of a larger population,[51] while this thesis contains almost all countries that have been OECD members for most of the time period. Also, the fixed effects estimator is better when facing a possible omitted variable bias, which is

[48] Baltagi et al (2000), p. 119 present an easily accessible list.
[49] Kennedy (2003), p. 304
[50] In this example, 2004 and the US are omitted. I will let the software choose the year and code that should not have a dummy.
[51] Judge et al (2001), p. 359

indeed the case here; I do not propose to have every country-specific characteristic included. When considering asymptotic analysis, making the time periods go towards infinity seems to make a lot more sense than assuming that the number of OECD countries approaches infinity, another argument for using the fixed effects estimator.[52] Finally, Hausman tests on the fixed and random effects estimators have not been conclusive, another reason to choose the fixed effects estimator[53].

With these estimation methods, I will now go through the hypotheses and see if any significance can be found.

3.2 Responses to fluctuations (H1)

3.2.1 Primary result: Non-Keynesian policy

Using the above panel data analysis method on the various fiscal indicators yields the results found in Table 1.[54] Figure 11 shows 95% intervals for the unemployment gap coefficients.

	Unempl. gap		**Debt/GDP ratio**		**R-Squared**	**N**
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**		
Change in primary balance	**0.0013**	*0.043*	**0.0139**	*0.001*	0.2940	554
Change in CAB	-0.0011	*0.068*	**0.0136**	*0.001*	0.1833	529
Blanchard's Fiscal Impulse	**0.0017**	*0.007*	**0.0149**	*0.000*	0.2738	562
Holden-Braconier	-0.0001	*0.847*	0.0104	*0.098*	0.1972	453
Level indicators:						
Primary balance	**-0.0063**	*0.000*	**0.0318**	*0.000*	0.4513	558
CAB	-0.0019	*0.059*	**0.0360**	*0.000*	0.4895	542
Discretionary budget balance	**0.0050**	*0.017*	0.0189	*0.226*	0.3620	520
Discretionary budget balance, c	**0.0062**	*0.003*	-0.0040	*0.774*	0.4075	490
Coefficients in bold are significant on a 95% level.						

Table 1: OECD-wide results

[52] Kennedy (2003), p. 316
[53] Kennedy (2003) argues that the random effects estimator should be chosen when the null of unsystematic difference in coefficients clearly cannot be rejected, and the fixed effects estimator otherwise.
[54] The STATA command is <xi: reg [fiscal indicator] [unemployment gap, t-1] [debt ratio, t-1] i.year i.code>. Intercepts and dummy coefficients omitted. Regression logs are available on request.

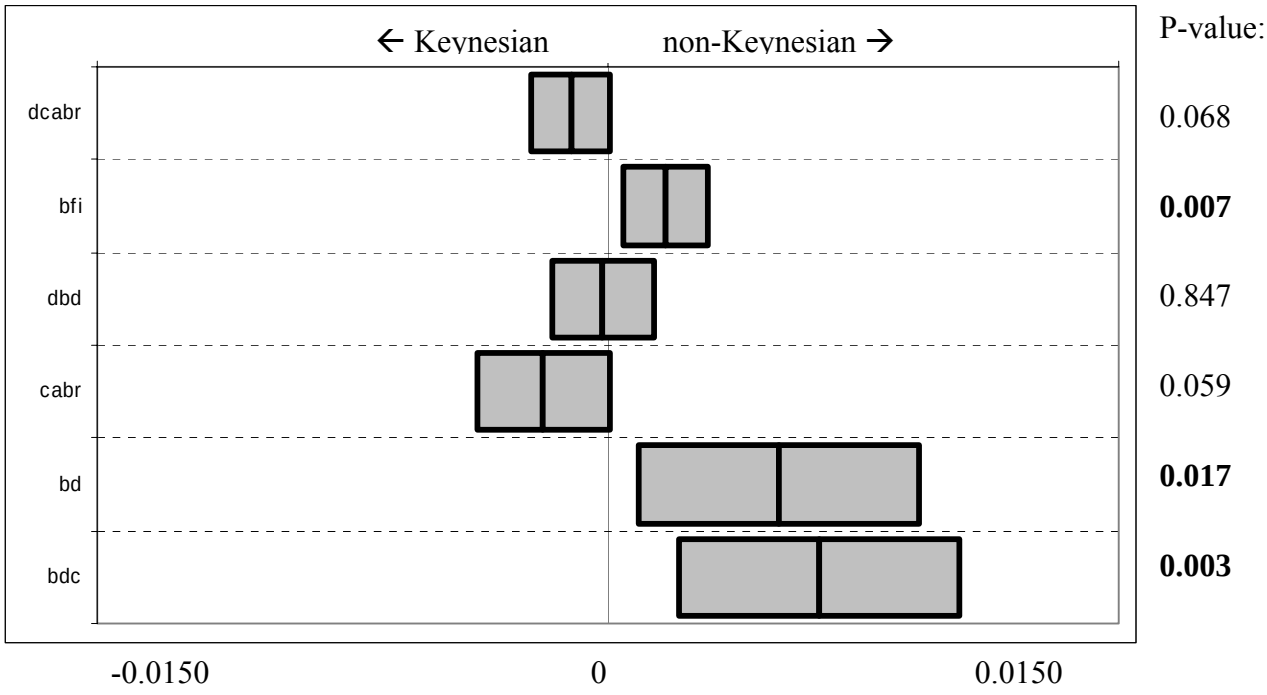

Figure 11: Coefficient estimates, 95% interval, entire panel

All the significant indicators are consistent: Fiscal policy is **not** conducted counter-cyclically. An increase in unemployment leads to discretionary fiscal tightening. According to the discretionary budget balance, an increase in unemployment gap of one percentage point would lead to a tightening of financial policy by about half as much. Estimation using Blanchard's Fiscal Impulse predicts an effect of about .17%. The Holden-Braconier indicator hardly predicts any tendency at all. Differences in magnitude are partly due to the different ways the indicators are constructed, as discussed in chapter 2; the sign of the effects is the primary concern here.
Note that the cyclically adjusted balance, while not significantly different from zero, hints that these results are indicator-dependent. When sticking to the OECD way of measuring fiscal policy, Keynesianism seems to be the strongest tendency. The results must therefore be carefully interpreted.

That the discretionary budget balance predicts the largest responses of fiscal policy to cyclical position is not too surprising. As discussed in section 2.2.6, the calculation yields

a more volatile result; in addition, the removal of social security expenditures could in some cases lead to a bias towards classical policy for this indicator. That the CAB yields near-significant Keynesian results should be noted; this suggests that the approach used by the OECD is different from the other options. Based on the discussion in chapter 2, one could interpret this difference as a focus on output rather than unemployment among governments; after all, the unemployment-focused Blanchard indicator shows a more non-Keynesian tendency.

The R^2-values are generally higher for the level indicators. Does this, and the fact that the change in balance indicator shows an unexpected result (automatic stabilizers should work the other way, as the level indicator shows) imply that the lag of one year is incorrectly chosen? To control for this, I have run some estimations for the change indicators without the lag on the right-hand side, and the fit does not improve.[55] Therefore, I will not change my assumption that one-year lags are most appropriate.

Though the results above point in different directions, my preliminary conclusion will be that non-Keynesian theory fits government behaviour best; a recession is met with a tightening of public finance. All significant results show the same effect, and, as pointed out in chapter 2, the use of the CAB as an indicator in this framework has been criticised.[56]

3.2.2 Automatic stabilizers

How automatic stabilizers work is not the scope of this thesis. However, a short discussion can be made, as the primary balance includes both induced and discretionary policy. Combined, these clearly show Keynesian properties, as the coefficient for `balr` (the primary balance level) shows. This should be expected, as the induced effects should work countercyclically and thus give a coefficient lower than the discretionary effects that the other indicators try to capture. According to the regression results, an increase in

[55] Similar regressions run with zero- and two-period lags on the right hand side; no systematic difference in coefficient significance or R-squared-values. Results are available on request.
[56] Blanchard (1990), p. 6

the unemployment gap of one percentage point would increase the budget deficit by .63 percentage points the following year.

When looking at the change in the primary deficit (`dbalr`), however, no Keynesian effects are found. This may imply that effects actually take more than one year to affect the economy. As mentioned above, another possible explanation would be that the use of one-year change values on the left-hand side is actually not a good solution, and that the level indicators are better.

3.2.3 Country-specific estimates: Low significance

To relax the restriction of equal coefficients across countries, I have also run simple OLS regressions for the separate countries. When considering the countries separately, there are fewer observations for each regression, and significant results are therefore harder to find. Indeed, for some indicators, coefficients significantly different from zero are hardly present.[57]

The discussions in this section will mainly be centred on the coefficients estimated by the cyclically adjusted balance and the discretionary budget balance, as these yield the clearest results and, in most cases, represent minimum and maximum values of the estimates. Figure 12 shows the significant coefficients obtained using the various indicators, while Figure 13 compares the results obtained using `cab` and `bd`.

[57] The regression method (in STATA) is <by country: reg [fiscal indicator] [cyclical indicator, t-1] debtratio, t-1>. Tables of coefficients significantly different from zero are found in the appendix. Regression outputs are available on request.

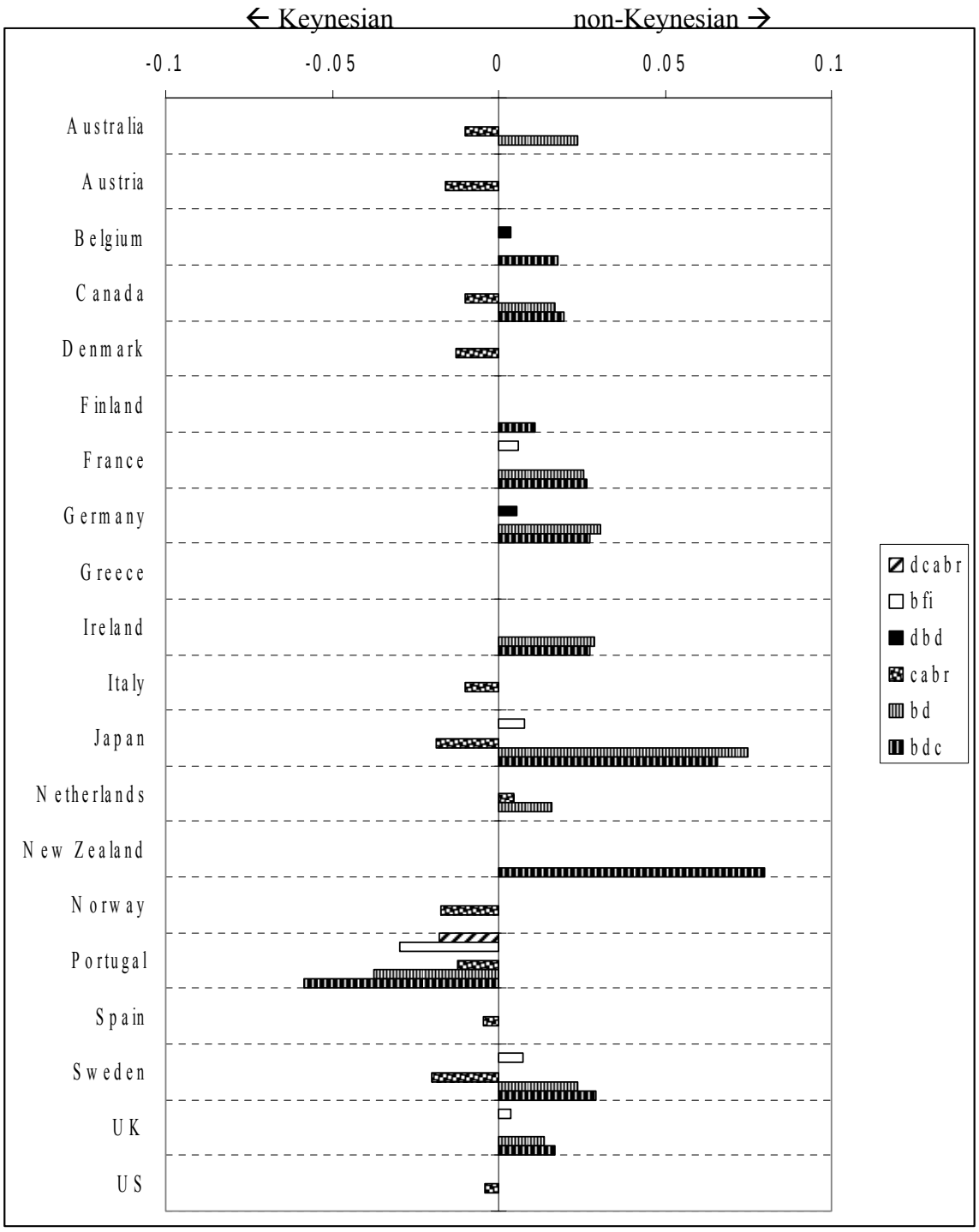

Figure 12: Unemployment gap coefficients significantly different from zero

As discussed in the previous section, the CAB shows a more Keynesian tendency than the other indicators. In this case, only the Netherlands is significantly classified as non-Keynesian, while eleven other countries show up with Keynesian policy. Among these are several countries with large welfare states (implying a preference for larger

government?) such as three of the Scandinavian countries, but also countries which can be perceived to be more conservative, such as the United States.

The discretionary budget balance measure appears more inclined to show countries as classicist. [58] Only Portugal comes across as a country with Keynesian policies for all indicators.

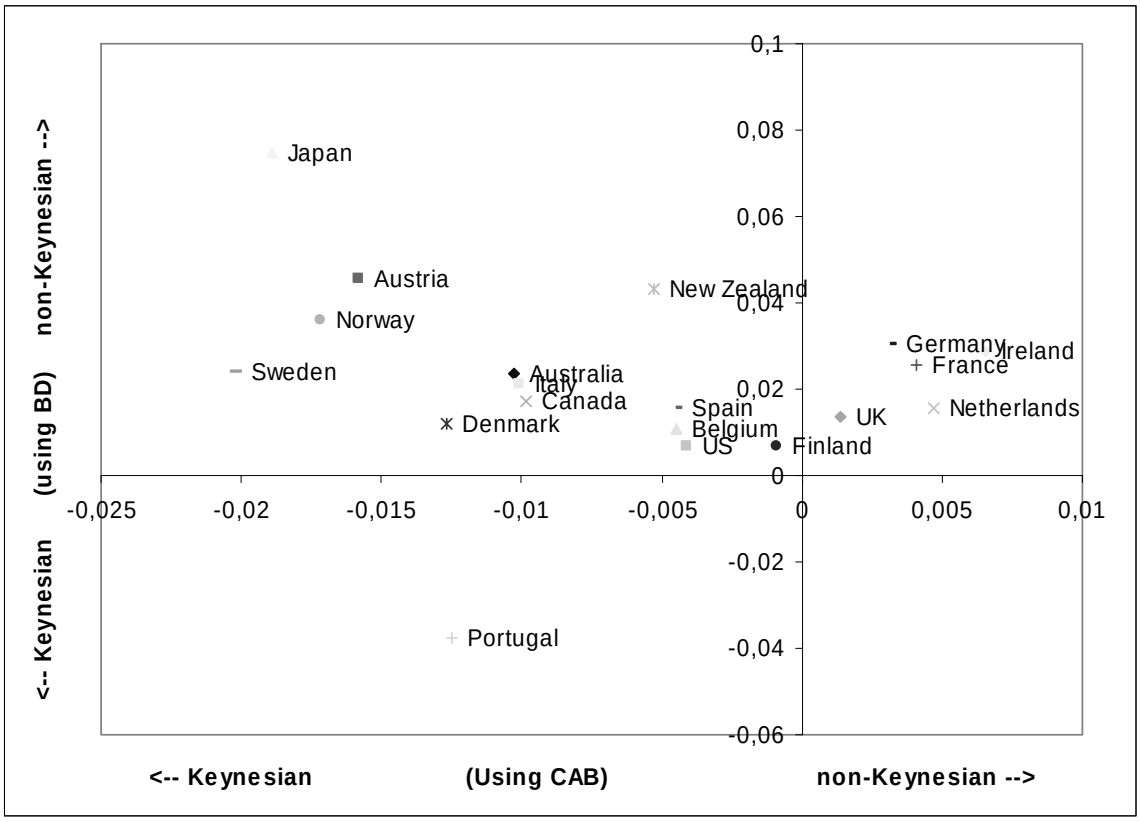

Figure 13: Different coefficients using the OECD measure and the discretionary balance (significant and non-significant results)

The following discussion only takes into account the CAB and the discretionary budget balance as shown in Figure 13.

The **Scandinavian countries** (Sweden, Denmark and Norway) appear to have the same degree of countercyclical policy when a CAB estimation is used. This may be expected for countries with large welfare states; one could expect a strong emphasis on the adverse

[58] There are no systematic differences between the two ways of calculating this here; therefore, only the results following from the "simple" indicator will be shown.

effects of unemployment. However, "big government" should also work as an automatic stabiliser, reducing the need for discretionary fiscal policy. From the results, it would appear that the former effect is strongest, giving a relatively countercyclical policy in these countries. Finland, another country with similar characteristics, does not, however, share this result. When estimating using the discretionary budget balance, the spread is wider and the results are not significant.

Three **large European countries** (Germany, France, and the UK) show similar characteristics with both the discretionary budget balance and the CAB; they appear to be moderately procyclical. I do not have any good explanation for this; constraints not discussed in this thesis might have similar effects in these countries. Italy and Spain could be said to be in the same category, but show similar characteristics only when estimating with the discretionary budget balance. The United States, which should be considered a group of its own, shows some of the same characteristics as the large European countries.

Smaller European countries appear more scattered in the figure. Belgium and the Netherlands share almost the same coefficient when a discretionary budget balance estimate is used, but are more apart when using the CAB. Austria is one of the countries with the largest spread between the estimates; however, only the CAB is significantly different from zero. Portugal appears to be a case of its own; the only country that is predicted to be Keynesian by all indicators. It should be noted that the estimate is based on fewer observations than for the other countries.

I will not group the **non-European countries** here. Japan is estimated to be the most pro-cyclical country by the discretionary budget balance, while the CAB predicts it as one of the most countercyclical. Japan has experienced relatively slow cyclical movements; this could mean that the trending used in the discretionary budget balance would have time to adjust in a long recession, for example, while the CAB, emphasising theoretical potential output, would not. Such differences in calculations could explain the large differences in the estimated coefficients for Japan.

The total effect (Keynesian or not) still seems to be indicator-dependent. The OECD estimates use country-specific production functions, while the other indicators use the same procedures for all countries; this is likely to be one of the reasons for the deviations.

As the CAB stands out in a separate direction, while the other indicators (Blanchard, the discretionary budget balance and mostly the Holden-Braconier indicator) agree, I will focus on the effects from the latter. If this is done, we can agree that non-Keynesian results dominate. I will therefore maintain my conclusion from the previous section; that pro-cyclical tendencies dominate, but that the results are not unequivocally confirmed. There is obviously a need for further research in this field, a fact that I will return to in the concluding section.

3.3 Constrained by debt (H2)

The debt constraint hypothesis, saying that higher debt/GDP-ratios lead to tighter fiscal policy, is confirmed. The results that are significantly different from zero are summarized in Figure 14.[59] No significant results were found for `dbalr` or `dbd`.

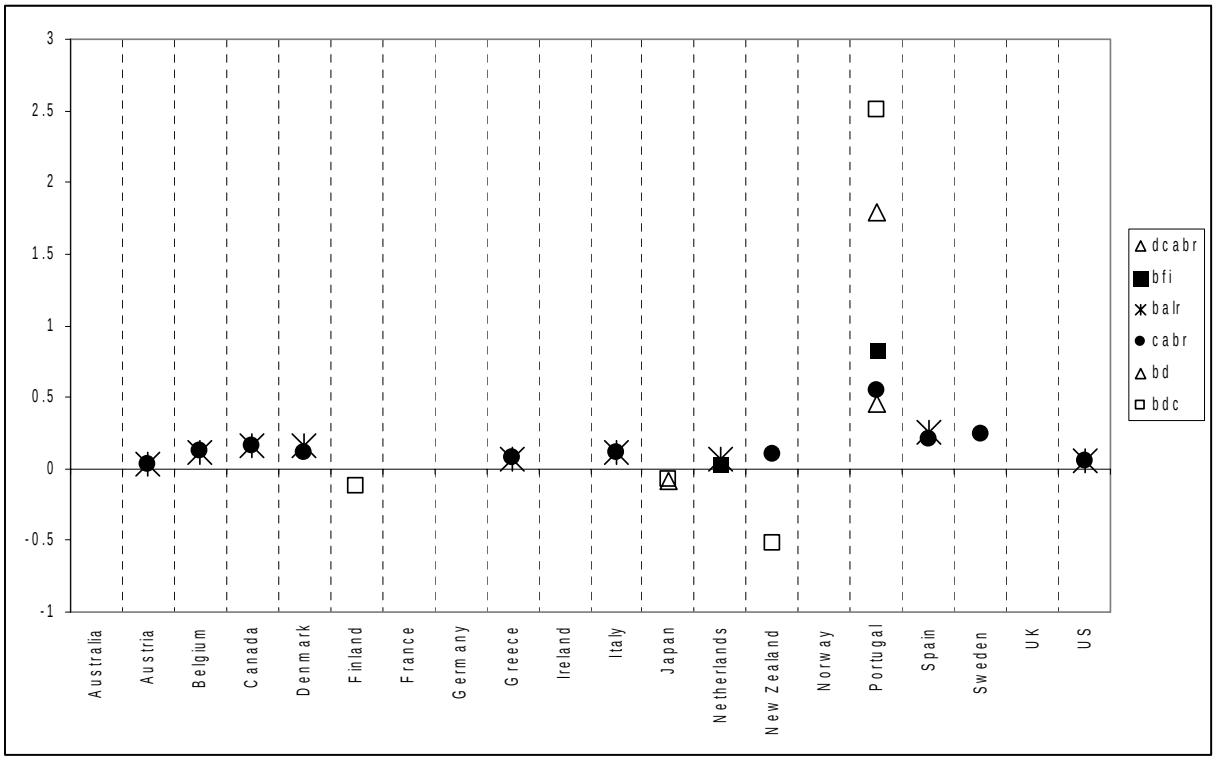

Figure 14: Effects of debt/GDP ratio on fiscal policy, significant results, by country

[59] Tables of significant coefficients are found in the appendix, in the same tables as the unemployment coefficients.

All significant results predict that an increased debt/GDP-ratio lead to a tighter fiscal policy, the only exception being a few results for Finland, Japan and New Zealand. Increased debt also constrains the overall budget; all the significant coefficients for `balr` are above zero. Countries with high debt could either be assumed to run high deficits (if that was why debt was high initially; that some countries run high deficits and accumulate high debt) or low deficits (that countries that have acquired the debt in the past now act responsibly to get rid of the debt). The sign of the coefficients for the primary balance shows that the latter is more correct; countries with high debt run a tighter fiscal policy.

As shown in Figure 1 (on page 10), gross public debt is not equally volatile for all countries. Countries such as Norway, with low significance, have a stable level of public debt; this might be the reason for the low significance of the estimates. The use of gross rather than net debt also discards some information; some countries (again Norway) have large assets that would alleviate problems of high debt. I have, however, chosen to stick with the gross value, as data are more reliable.

The fact that public debt is shown to constrain fiscal policy is also a vote of confidence for the indicators; the effects go in the expected direction. As shown in Table 2 below, these results also hold when dividing the data into different time periods.

3.4 Historical development (H3)

In the discussion above, though I have relaxed the restriction of constant coefficients among countries, constant coefficients in different time periods have not been considered. This will be done in this section. I start by defining four distinct time periods, and proceed to examine the parameter values in these periods. To keep the number of coefficients manageable, I will reinstate the restriction that coefficients are equal among countries, but still assume different intercepts, using the fixed effects estimator with year dummies as explained in section 3.1.2.

When looking for changes over time, one approach could be to do cross-section estimates for each year, and compare the results. Such estimates yield little significance; an indication that short-term fluctuations in the coefficients are not correlated between

countries. As I am interested in more long-term changes, I have decided to group the data into decades. Rather than breaking the data off arbitrarily (at round numbers, for example), I have chosen to divide the series at some fairly important economic events. I will divide the time period for which I have data, 1960-2004, at the following points:

1973. The end of the Bretton Woods system removed the United States dollar as the sole key currency of the world.[60] In addition, conflicts in the Middle East lead to the oil crisis in the fall of 1973, interrupting the spectacular growth seen in the OECD era for several decades, and accelerating inflation.[61]

1983. In the beginning of the 1980s, Western economies started to overcome the woes of stagflation. In addition, increased liberalisation, particularly marked by the conservative turns in the UK and US, lead to deregulation. International financial deregulation, combined with the computer revolution, lead to a sharp increase in international financial trade.[62]

1993. The breakdown of the EMS in 1992-93 lead to changes in the possibilities of monetary policy. This probably affected the use of fiscal policy. At the same time, increased European integration in other fields led to less political and economic independence for many countries.

This gives 1960-1972, 1973-1982, 1983-1992, and 1993-2004 as the time periods used.

The results are presented in Table 2. Figure 15 shows the evolution of the coefficients in the last three time periods (the first, 1960-72, has very few observations).

[60] Palmer and Colton (1995), p. 903
[61] Palmer and Colton (1995), pp. 992 - 993
[62] Palmer and Colton (1995), p. 999

1960-1972

	Unempl. gap		**Debt/GDP ratio**		**R-Squared**	**N**
Change indicators:	**Coef**	**P-value**	**Coef**	**P-Value**		
Change in CAB	0.0045	*0.484*	-0.0130	*0.943*	0.7034	20
Blanchard's Fiscal Impulse	0.0047	*0.305*	-0.1812	*0.140*	0.6000	31
Holden-Braconier	0.0006	*0.899*	-0.1598	*0.226*	0.6601	31
Level indicators:						
CAB	0.0002	*0.950*	**-0.3219**	*0.006*	0.9178	26
Discretionary budget balance	-0.0021	*0.915*	**-1.3018**	*0.013*	0.5723	31
Discretionary budget balance, c	0.0232	*0.207*	-0.0737	*0.800*	0.5954	34

1973-1982

	Unempl. gap		**Debt/GDP ratio**		**R-Squared**	**N**
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**		
Change in CAB	-0.0021	*0.338*	0.0046	*0.854*	0.2829	106
Blanchard's Fiscal Impulse	0.0005	*0.792*	0.0318	*0.152*	0.3453	128
Holden-Braconier	-0.0030	*0.144*	0.0251	*0.288*	0.2641	116
Level indicators:						
CAB	-0.0021	*0.292*	**-0.0658**	*0.005*	0.7763	113
Discretionary budget balance	0.0003	*0.959*	0.0426	*0.590*	0.5319	108
Discretionary budget balance, c	0.0000	*0.998*	-0.0618	*0.396*	0.5657	105

1983-1992

	Unempl. gap		**Debt/GDP ratio**		**R-Squared**	**N**
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**		
Change in CAB	**-0.0031**	*0.010*	**0.0718**	*0.000*	0.2994	166
Blanchard's Fiscal Impulse	0.0008	*0.548*	**0.0951**	*0.000*	0.3762	166
Holden-Braconier	-0.0011	*0.472*	**0.0481**	*0.042*	0.2944	140
Level indicators:						
CAB	**-0.0032**	*0.029*	**0.0795**	*0.000*	0.6705	166
Discretionary budget balance	0.0034	*0.410*	0.0800	*0.208*	0.3781	156
Discretionary budget balance, c	0.0028	*0.490*	0.0261	*0.670*	0.4547	142

1993-2004

	Unempl. gap		**Debt/GDP ratio**		**R-Squared**	**N**
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**		
Change in CAB	-0.0007	*0.375*	**0.0219**	*0.005*	0.2278	237
Blanchard's Fiscal Impulse	0.0017	*0.094*	**0.0225**	*0.016*	0.3526	237
Holden-Braconier	0.0001	*0.936*	0.0178	*0.297*	0.1905	166
Level indicators:						
CAB	**-0.0036**	*0.001*	**0.0201**	*0.040*	0.7912	237
Discretionary budget balance	0.0057	*0.080*	-0.0072	*0.810*	0.3563	225
Discretionary budget balance, c	**0.0074**	*0.026*	-0.0069	*0.817*	0.4000	209

Coefficients in bold are significant on a 95% level.

Table 2: Effects on fiscal policy, by decade

As is shown, this coarse division shows little significance; a clear historical development cannot be found. The only fiscal indicator to show significant results for two consecutive periods is the CAB in the two last decades, hinting at a small shift towards more Keynesian policy. This is in accordance with Galí and Perotti (2003). If I look at the estimates that do not fulfil the significance requirements, this trend is not confirmed; all the other indicators yield parameters that show trends away from countercyclical responses. As I have suggested in previous sections that the CAB is biased towards Keynesian policy, an argument could be made that Hypothesis 3 is at least weakly supported; theories that do not support demand management may have gained some ground.

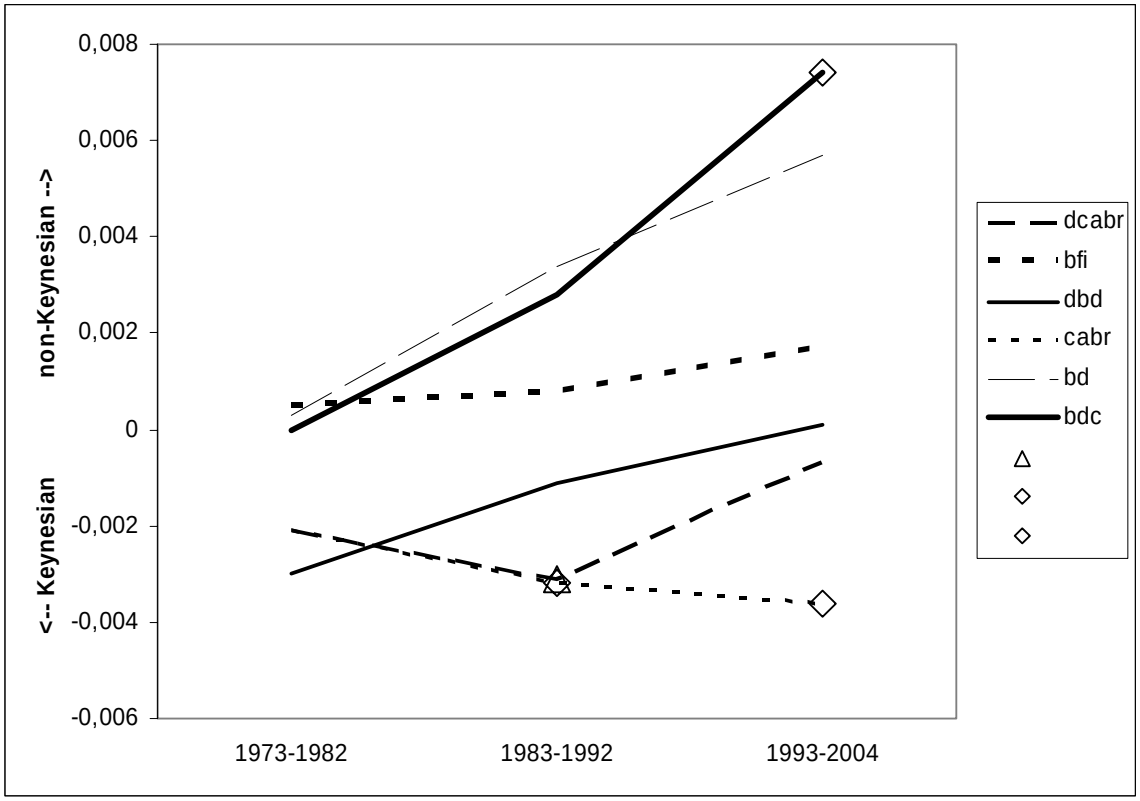

Figure 15: Estimates of effect on fiscal policy, by decade. Significant results marked

The results from this section are not strong enough to conclude. The fact that policy does not show a clear trend towards classicism is interesting in itself, given the increased popularity such theories have gained among economists. One should also note that an estimation using only OECD measures would have yielded a significant result here, while

the emphasis on various indicators shows underlying trends that go in the opposite direction.

3.5 Influence of ideologies (H4)

To test whether the political stance of governments matters for fiscal policy, I have first divided the observations according to which governments held power. Defining observations between -5 and 5 on the McDonald / Mendes scale as “centrist” and observations smaller than -12 and larger than 12, respectively, as “left” and “right”, I get five approximately equally sized groups, as shown in Figure 16. The same panel data estimates as above have been performed on these groups.

The usual divergence of the coefficient estimates according to indicator clouds the picture here as well, but the “centre/right” governments (5 to 12 on McDonald / Mendes scale) stands out as particularly pro-cyclical. For this case, the CAB and the discretionary budget balance yield significant results.

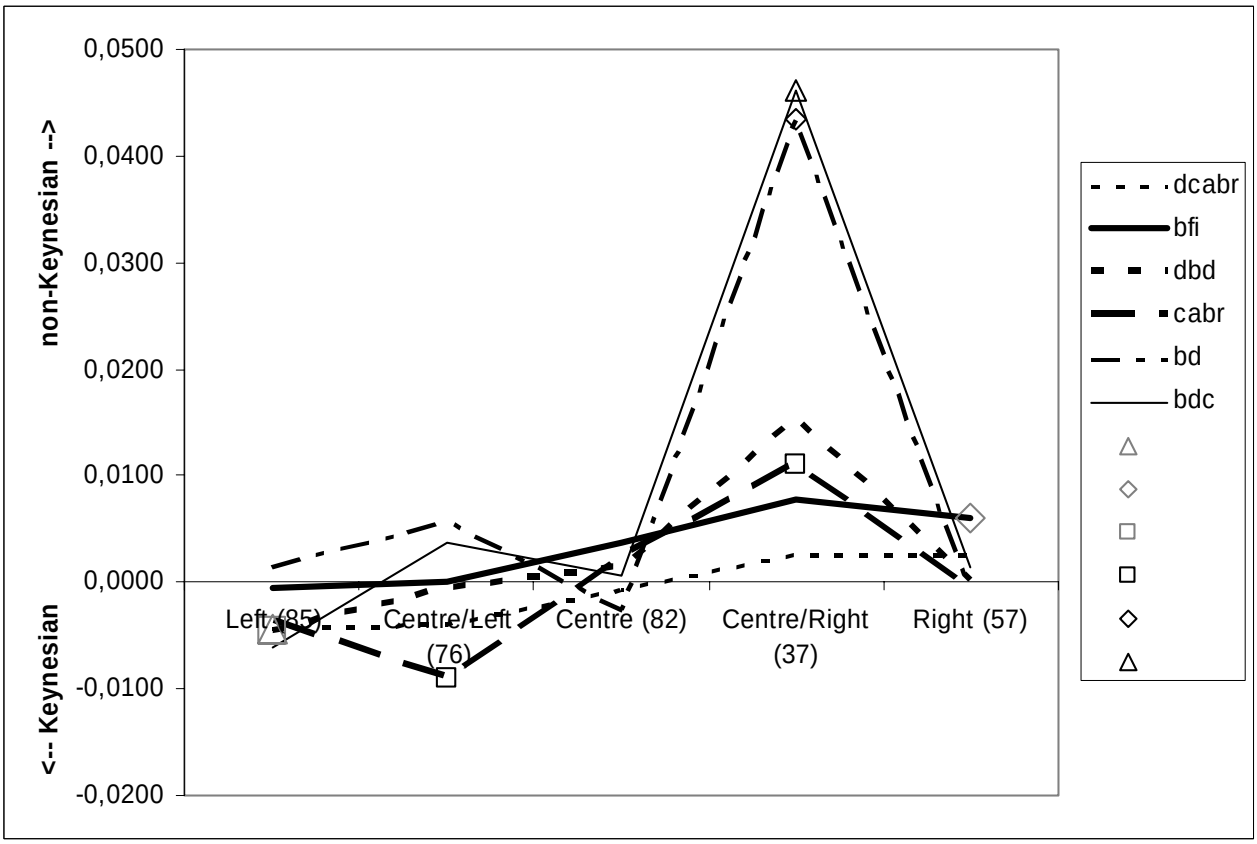

Figure 16: Coefficient estimates, by government class. Average number of observations in parentheses. Significant coefficients (95%) are marked

This question may be more formally analysed by including a political stance variable in the regression. To analyse the effects of political stance on the conductance of fiscal policy, I also include an interaction variable between political stance and unemployment gap. The modified equation becomes

$$F_{i,t} = \alpha + \beta U_{i,t-1} + \psi G_{i,t-1} + \zeta \left(U_{i,t-1} \cdot G_{i,t-1} \right) + \gamma Z_{i,t-1} + \varepsilon_{it}$$

where G indicates the political stance of the government (positive values indicate government to the right).[63] ζ is interpreted as $\frac{\delta\left(\frac{\delta F}{\delta U}\right)}{\delta G}$; the effect on the conductance of fiscal policy of fluctuations in the political stance of the government.

[63] The regression still includes year and country dummies.

Some of the results from the regression are presented in Table 3. For a complete list of coefficient estimates, see Appendix C.

	Unempl. Gap		**Government stance**		**Unempl * Govt**			
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**	**Coef (ζ)**	**P-Value**	**R-Sq.**	**N**
Change in CAB	-0.0013	*0.068*	0.000016	*0.849*	0.000053	*0.136*	0.2306	323
Blanchard's Fiscal Imp.	**0.0020**	*0.004*	-0.000019	*0.818*	**0.000070**	*0.050*	0.3251	354
Holden-Braconier	0.0000	*0.974*	-0.000012	*0.907*	0.000041	*0.324*	0.2685	328
Level indicators:								
CAB	-0.0013	*0.191*	**-0.000289**	*0.016*	**0.000136**	*0.007*	0.5755	334
Discr. budget balance	0.0033	*0.165*	**0.000578**	*0.039*	-0.000153	*0.192*	0.4079	345
Discr. budget balance, c	0.0046	*0.056*	0.000180	*0.534*	-0.000014	*0.912*	0.4645	326
Coefficients in bold are significant on a 95% level.								

Table 3: Coefficients for political stance

Both significant coefficients lead to the same conclusion: A more conservative government leads a less countercyclical fiscal policy. A switch from a government moderately to the left on the scale (-5) to a government moderately to the right (+5) would give an increase in the responsiveness of fiscal policy to unemployment gap (a shift away from Keynesianism) of about .001. Given the previously determined sizes of the coefficients, this is a visible effect, but not as large as country-specific differences.

It should be noted that the inclusion of political variables does not increase the R^2-values much for any equation, meaning that the political data does not improve the fit of the model. The p-value for unemployment gaps do indeed go down for some indicators. For this reason, care should be taken not to over-interpret the results; similar variations in government stance and unemployment could be responsible for some of the high significance.

Figure 16 suggests that the effect of political stance is not linear; that right and centre governments have more in common with each other than they have with "centre/right" governments, for example. One reason of this could be that centre/right-governments are more likely to be weak, relying on support from both sides of the political spectrum. For this reason, it is interesting to include government strength as an explanatory variable. The share of seats in parliament held by the government is used, as discussed in chapter 2.

The modified equation is[64]

$$F_{i,t} = \alpha + \beta U_{i,t-1} + \psi G_{i,t-1} + \zeta\left(U_{i,t-1} \cdot G_{i,t-1}\right) + \kappa S_{i,t-1} + \lambda\left(U_{i,t-1} \cdot S_{i,t-1}\right) + \gamma Z_{i,t-1} + \varepsilon_{it}\,.$$

Estimates for ζ (Unempl * Govt) and λ (Unempl * Strength) are presented in Table 4.

The remaining coefficients are shown in Appendix C.

	Unempl. gap		**Unempl * Govt**		**Unempl * Strength**			
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**	**Coef**	**P-Value**	**R-Sq.**	**N**
Change in CAB	0.0041	*0.149*	0.000058	*0.100*	**-0.000094**	*0.049*	0.2425	323
Blanchard's Fiscal Imp.	**0.0086**	*0.003*	**0.000074**	*0.037*	**-0.000114**	*0.019*	0.3377	354
Holden-Braconier	0.0056	*0.098*	0.000050	*0.236*	-0.000095	*0.087*	0.2762	328
Level indicators:								
CAB	**-0.0116**	*0.004*	**0.000121**	*0.014*	**0.000176**	*0.010*	0.5908	334
Discr. budget balance	**0.0209**	*0.018*	-0.000141	*0.229*	**-0.000305**	*0.039*	0.4167	345
Discr. budget balance, c	**0.0282**	*0.002*	0.000022	*0.860*	**-0.000407**	*0.006*	0.4791	326
Coefficients in bold are significant on a 95% level.								

Table 4: Coefficients for political stance and government strength

Several significant results are found for government strength. All significant results but one support the hypothesis on government strength: Weaker governments have less countercyclical policy. The effects are of about the same magnitude as the effect of political stance. The CAB does, in this case, give a significant result in an opposite direction; I do not have a good explanation for this.

Inserting government strength as a control variable does not improve the fit. The R^2-values are approximately the same. Combined with the clear disagreements between the indicators, this leads me not to conclude clearly on the question of government strength. When considering the effects of government strength, differentiating between booms (when it would be hard for a "weak" government not to increase spending) and recessions (where a "weak" government might easily lead countercyclical policy) would be an interesting approach. As this question is not the central aspect of this thesis, I will not pursue this discussion any further, I will, however, argue that the former effect seems to dominate; the difference between strong and weak governments could thus be assumed to be more pronounced in booms.

[64] Dummies still included…

To sum up, I have found weak evidence that parties to the left are more Keynesian. I have also found suggestions that strong governments have more freedom to run countercyclical policy. As the CAB systematically disagrees with the other indicators, I cannot make any clear conclusions; however, I will stick to my claim that there is some support in the data for Hypothesis 4: that conservative parties have less regard for countercyclical policy.

3.6 Conclusions

The main conclusion from this thesis is that the characterisation of fiscal policy is heavily dependent on the choice of fiscal indicator. I have examined four different indicators (OECD's Cyclically Adjusted Balance, Blanchard's Fiscal Impulse, the Holden-Braconier indicator and the discretionary budget balance) and found that the results vary widely. This may have implications for the interpretations of previous studies of the subject. The difference is especially pronounced for the OECD indicator, which in several cases have significant results different from the other indicators.

Even controlling for the various ways of indicating fiscal stance, some results may be found.

I have found some evidence of **procyclical fiscal policy**. To return to the discussion in the introduction, this could mean that the main value of the baseline Keynesian model is pedagogic, and that too many other factors influence the decisions before they are made, or that politicians have little regard for such models. Apart from the incompleteness of governments and influence of lobby groups, this could be caused by an interpretation of recessions as a reduction in expected income or an adherence to rules-based policy. The picture will of course differ within countries, and may fluctuate over time. For some countries, most notably Portugal, countercyclical tendencies are found.
Estimations using the OECD's cyclically adjusted balance differ from this picture, and present an overall Keynesian tendency. When applied to the entire panel, however, this estimate is not significantly different from zero.

The influence of **public debt** is found to be significant; a high level of public debt relative to total production leads to tighter fiscal policy.

When examining the **differences between time periods** using the OECD indicator, a slight movement towards Keynesian policy is found; however, other measures give a different picture. Historical trends in fiscal policy, if they exist, are too weak to be found with the methodology used in this dissertation.

The influences of **political points of view** are also unclear, but the strongest tendency is that conservative governments use Keynesian policy less often. Most methods also suggest that governments with more support in the parliament have fewer problems running a countercyclical policy.

Some of the more **inconclusive aspects** of this thesis point at several fields that will probably be more thoroughly researched in the future. The definitions of discretionary fiscal policy obviously need some work, as there are huge disruptions between calculations. The inclusion of more qualitative aspects in the analysis of fiscal policy while retaining an ability to generalise across countries would be valuable.
Balanced budget changes are not considered in this thesis; an analysis on the different motivations for lowering taxes or increasing public expenditure and the possible dependence of political influence would be interesting to read. More explicit political economy-modelling might also be used to study questions like these, incorporating problems related to “selling” a fiscal contraction and games between monetary and fiscal policy makers. Through some of these issues are not discussed thoroughly in this thesis, I still thinks it give a fair overview of the problem of characterising governments as Keynesian, and some important tentative conclusions on the subject.

Appendices

Appendix A: Details on fiscal indicator calculation

A1. Cyclically adjusted balance

The calculation of the cyclical component of the budget balance can be summarized as[65]

$$B^{cyclical} = \frac{1}{Y}\sum_i T_i\left[1-\left(\frac{Y^*}{Y}\right)^{\alpha_i-1}\right]-\frac{G}{Y}\left[1-\left(\frac{Y^*}{Y}\right)^{\beta-1}\right]+\frac{X}{Y}\left[1-\left(\frac{Y^*}{Y}\right)^{-1}\right]$$

where Y* is potential output, α and β elasticities, and T and G taxes and expenditure, respectively. Taxes and tax elasticities are decomposed into subgroups.

A2. Blanchard's Fiscal Impulse

This presentation follows the outline in Alesina and Perotti (1996a), p. 10.[66]

To obtain estimates of the effect of unemployment on transfers and taxes, an OLS estimation is done. The slope estimate is corrected for time trends:

$$\frac{TRANSF_t}{GDP_t} = \alpha_0 + \alpha_1 TR1 + \alpha_2 TR2 + \alpha_3 TR3 + \alpha_4 U_t + \varepsilon_t$$

$$\frac{YRGT_t - INTRG_t}{GDP_t} = \beta_0 + \beta_1 TR1 + \beta_2 TR2 + \beta_3 TR3 + \beta_4 U_t + e_t$$

where TR1, TR2 and TR3 are time trend variables (increase by 1 per year) for the periods 1960-1975, 1976-1992, and 1993-2004, respectively.[67] These parameters are calculated separately for each country. The estimates are then used in the impulse calculation:

$$\widetilde{BFI}_t = \Delta\left[\frac{YPGT - INTPG}{GDP}\right]_t - \Delta\left[\frac{YRGT - INTRG}{GDP}\right]_t - \left(\hat{\alpha}_4 - \hat{\beta}_4\right)\Delta U_t$$

---

[65] The equation is taken from van den Noord (2000), p. 18

[66] It was presented to me via a work note from Steinar Holden. The calculation is an extended version of a batch file created by Simen Markussen.

[67] The periodization is chosen to be consistent with Alesina/Perotti (1996a), and thereby also with Holden (2005). This was given higher priority than sticking to the time series division used in the rest of this thesis.

The effect of the change in the unemployment rate is thus estimated as the increase in transfers that come with increased unemployment minus the increase (that is, plus the decrease) in tax income.

A3. Holden-Braconier indicator

A3.1 Revenues

The tax bases are assumed to be related to the following bases:
TYH (household taxes) grows at the same rate as household income (HINC).
TYB (business taxes) grows at the same rate as business income (BINC).
TIND (indirect taxes) grows at the same rate as consumption (CONS).
SSRG (social security payments received) grows at the same rate as total wage income.
TOCR (other receipts) grows at the same rate as (nominal) GDP.
The induced expenditure change is then calculated as

$$\Delta T^{I}_{i,t} = TYH_t\left[\frac{HINC_t}{HINC_{t-1}}-1\right]+TYB_t\left[\frac{BINC_t}{BINC_{t-1}}-1\right]+TIND_t\left[\frac{CONS_t}{CONS_{t-1}}-1\right]$$
$$+SSRG_t\left[\frac{WAGES_t}{WAGES_{t-1}}-1\right]+TOCR_t\left[\frac{Y_t}{Y_{t-1}}-1\right]$$

and combined with the observed revenues as explained in the text.

A3.2 Expenditures

The induced part of unemployment expenditures is calculated as

$$\Delta G_t^{I,unempl} = G_{t-1}^{unemployment}\cdot\left[\left(\frac{U_t}{U_{t-1}}\right)\left(\frac{Y_t}{Y_{t-1}}\right)-1\right]$$

The "other" expenditures are calculated as

$$\Delta G_t^{I,other} = G_{t-1}^{other}\cdot\left[\frac{Y_t}{Y_{t-1}}-1\right]$$

These are then combined to estimate the combined effect as explained in the text.

A4. The discretionary budget balance

Trend levels for the variables are assumed to grow log-linearly. Regressing log(GDP) on year yields an RSS of .02, whereas a linear regression yields .24. As the GDP curve is

ever increasing in time, a linear prediction (with a five-year moving average, as I use here) would be downward biased. Using log-linear trending should help avoiding this. Below, tildes (~) indicate log values, so $\widetilde{G}_t = \log(G_t)$.

A4.1 Expenditures

The trend level of public expenditure is calculated as

$$\widetilde{G}_{t-3}^{trend} = \frac{1}{5}\sum_{k=1}^{5}\widetilde{G}_{t-k}$$

Trend growth (per year) is calculated as

$$\Delta\widetilde{G}^{trend} = \frac{\widetilde{G}_{t-1} - \widetilde{G}_{t-5}}{4}$$

The induced level of G for year t is thus

$$\widetilde{G}^{trend} = \widetilde{G}_{t-3}^{trend} + 3 \cdot \Delta\widetilde{G}^{trend}$$
$$G^{trend} = e^{\widetilde{G}^{trend}}$$

The indicator is based only on observances assumed to be available at time t.

A4.2 Revenues – simple

Still using tildes to indicate log values, the trend tax rate level is calculated as

$$\widetilde{\tau}_{t-3}^{trend} = \frac{1}{5}\sum_{k=1}^{5}\widetilde{\tau}_{t-k}$$

Trend growth (per year) is calculated as

$$\Delta\widetilde{\tau}^{trend} = \frac{\widetilde{\tau}_{t-1} - \widetilde{\tau}_{t-5}}{4}$$

The induced level of τ for year t is thus

$$\widetilde{\tau}^{trend} = \widetilde{\tau}_{t-3}^{trend} + 3 \cdot \Delta\widetilde{\tau}^{trend},\ \tau^{trend} = e^{\widetilde{\tau}^{trend}}$$

and the induced tax level (for the discretionary parts)

$$T^{trend} = \tau^{trend} \cdot GDP$$

A4.3 Revenues – complex

The tax system is defined as

$$\overline{\Theta} = \left\{\tau_{household}, \tau_{busi\ ness}, \tau_{indirect}, \tau_{social}, \tau_{other}\right\}$$

where τ are the postulated tax rates.

The tax rate vector is estimated as

$\overline{\Theta}_t = \left\{ \frac{TYH_t}{HINC_t}, \frac{TYB_t}{BINC_t}, \frac{TIND_t}{CONS_t}, \frac{SSRG_t}{WAGES_t}, \frac{TOCR_t}{Y_t} \right\}$, which means that $\widetilde{\overline{\Theta}}_t$ is the vector containing logs of the estimated tax rates.

Trends are then computed in the same way as for expenditures. For the household sector, this becomes

$$\widetilde{\Theta}^{trend}_{TYH,t-3} = \frac{1}{5}\sum_{k=1}^{5}\left(\log\left(\frac{TYH_{t-k}}{HINC_{t-k}} \right) \right)$$

and, projecting in the same way as for expenditure:

$$\widetilde{\Theta}^{trend}_{TYH,t} = \widetilde{\Theta}^{trend}_{TYH,t-3} + 3\left(\frac{\widetilde{\Theta}_{TYH,t-1} - \widetilde{\Theta}_{TYH,t-5}}{4} \right),\ \Theta^{trend}_{TYH,t} = e^{\widetilde{\Theta}^{trend}_{TYH,t}}$$

for all tax rates (TYB, TIND etc.)

This is used with the data for year t to calculate induced expenditure.

$$T^{trend} = \overline{\Theta}^{trend}_t \cdot \{HINC_t, BINC_t, CONS_t, WAGES_t, Y_t\}$$

This scalar product gives the trend value of public expenditure. Note that the $T_C^{observed}$ used in the final calculation includes *SSRG*, while the $T^{observed}$ used in the "simple" calculation does not.

A5. Fiscal indicator correlations

The correlations between the indicators (for the 405 observations where all are available) are as follows:

Change indicators:	dbalr	dcabr	bfi	dbd	balr	cabr	bd	bdc
Ch. in prim. bal	1.0000							
Change in CAB	0.7832	1.0000						
Blanchard's FI	0.9606	0.7589	1.0000					
Holden-Braconier	0.7876	0.7514	0.7752	1.0000				
Level indicators:								
Primary balance	0.2905	0.1766	0.2639	0.1220	1.0000			
CAB	0.2434	0.2627	0.2289	0.1636	0.7097	1.0000		
Disc. budg. bal	0.4894	0.4593	0.4683	0.5995	-0.1169	0.0223	1.0000	
DBB, complex	0.5462	0.4984	0.5092	0.6853	-0.1227	0.0245	0.9060	1.0000

The change indicators have high correlation coefficients. Correlation is lower among the level indicator, implying greater difference in calculation methods there. Correlation between the level and change indicators is quite high.

A6. Cyclical indicator correlations

The correlations between cyclical variables and fiscal indicators are as follows

Cyclical indicators:	Ugap	u	gdpgap
Unemployment gap	1.0000		
Unemployment	0.6725	1.0000	
Output gap	-0.7844	-0.4364	1.0000
Change indicators:			
Ch. in prim. bal	0.0774	0.1084	0.1008
Change in CAB	0.0884	0.0924	-0.0510
Blanchard's FI	0.1082	0.1204	0.0516
Holden-Braconier	0.2049	0.1040	-0.1235
Level indicators:			
Primary balance	-0.3543	-0.1218	0.4390
CAB	0.0167	0.1747	0.0192
Disc. budg. bal	0.3833	0.1781	-0.3276
DBB, complex	0.3968	0.1795	-0.3197

(number of obs=405)

As noted in the main text, the unemployment gap is placed "between" the unemployment rate and the output gap; it has the highest correlation with both.

Appendix B: Data sources

Economic data:

The backbone of the data file is the OECD Economic Outlook data for 2004. This is accessible from http://new.sourceoecd.org for subscribers. All economic data is obtained from this source, except the following data taken from Holden (2005)

- Unemployment benefits

- Household income (originally from OECD EO)
- Business income, constructed as (GDP – {Total wage bill} – {Employer contribution to social security and pensions} – {self-employment income (missing)} – TIND + TSUB)
- Wage bill

Fiscal indicators:

- `balr` / `dbalr`: From OECD EO – scaled by GDP as explained in the text.
- `cabr` / `dcabr`: From OECD EO – scaled by GDP as explained in the text.
- `bfi`: Constructed. STATA do-file available on request. The calculation is based on a similar version (running only to 1992) made by Simen Markussen.
- `dbd`: Compiled by Simen Markussen for Steinar Holden using OECD EO data and some supplementary data (received from Braconier via OECD? – ask!)
- `bd`: Constructed as explained in the text.
- `bdc`: Constructed as explained in the text. `HINC`, `BINC` and `WAGES` have the same sources as for the Holden-Braconier indicator.

Political indicators:

- **McDonald and Mendes**: Downloaded from http://www.binghamton.edu/polsci/research/mcdonalddata.htm (the file name is http://www.binghamton.edu/polsci/research/Governments.sav). Codebook is available from the same address.
- **Swank** (used for verification): Downloaded from http://www.marquette.edu/polisci/Swank.htm. Codebook is available from the same address.
- **Ardagna** (used for verification): Received by mail via Steinar Holden and Simen Markussen

Appendix C: Regression results

This appendix presents regression results that are not shown as tables in the text. Intercepts and dummy coefficients are not shown.

C1. By country estimates

Only results significant on a 95% level are shown.

Change in primary balance				
	ugap1	debtratio1	R-Squared	N
Australia			0.3291	16
Austria			0.0368	34
Belgium			0.1498	33
Canada			0.2027	34
Denmark	0.0072		0.3996	24
Finland			0.1711	29
France	0.0052		0.2631	27
Germany			0.0762	38
Greece			0.0136	29
Ireland			0.2713	25
Italy			0.0499	39
Japan	0.0077		0.1430	34
Netherlands			0.1954	24
New Zealand	0.0120		0.5963	12
Norway			0.0151	26
Portugal			0.2906	9
Spain			0.2239	14
Sweden	0.0081		0.3248	34
UK	0.0039		0.1630	34
US			0.1091	39

Blanchard's Fiscal Impulse				
	ugap1	debtratio1	R-Squared	N
Australia			0.2881	16
Austria			0.0361	34
Belgium			0.1716	33
Canada			0.1848	34
Denmark			0.1752	24
Finland			0.1704	29
France	0.0060		0.3221	27
Germany			0.0806	38
Greece			0.0338	29
Ireland			0.2899	25
Italy			0.0491	39
Japan	0.0076		0.1470	34
Netherlands		0.0324	0.1951	32
New Zealand			0.4229	12
Norway			0.0121	26
Portugal	-0.0295	0.8346	0.9273	9
Spain			0.3460	14
Sweden	0.0074		0.3448	34
UK	0.0038		0.1750	34
US			0.0176	39

Change in CAB				
	ugap1	debtratio1	R-Squared	N
Australia			0.2722	16
Austria			0.0491	31
Belgium			0.0613	32
Canada			0.1193	34
Denmark			0.1009	24
Finland			0.0579	27
France			0.0979	27
Germany			0.0074	35
Greece			0.0134	28
Ireland			0.1313	24
Italy			0.0261	39
Japan			0.1096	33
Netherlands			0.0303	24
New Zealand			0.2552	12
Norway			0.0409	25
Portugal	-0.0177	0.4589	0.7575	9
Spain			0.0239	14
Sweden			0.2428	24
UK			0.0167	33
US			0.0594	38

Holden-Braconier indicator				
	ugap1	debtratio1	R-Squared	N
Australia			0.2851	15
Austria			0.0144	33
Belgium	0.0035		0.1863	31
Canada			0.1099	29
Denmark			0.1065	13
Finland			0.0682	28
France			0.1507	25
Germany	0.0056		0.1744	37
Greece				0
Ireland				0
Italy			0.0579	37
Japan			0.1046	32
Netherlands			0.0216	30
New Zealand			0.3126	11
Norway			0.0374	25
Portugal				0
Spain			0.0692	13
Sweden			0.1292	33
UK			0.0187	28
US			0.0647	33

Primary balance				
	ugap1	debtratio1	R-Squared	N
Australia	-0.0137		0.5295	16
Austria	-0.0224	0.0291	0.2847	34
Belgium	-0.0078	0.1163	0.6204	33
Canada	-0.0132	0.1631	0.6766	35
Denmark	-0.0195	0.1638	0.4914	24
Finland	-0.0091		0.2981	29
France			0.0259	27
Germany			0.0954	38
Greece		0.0722	0.5245	29
Ireland			0.0198	25
Italy	-0.0116	0.1107	0.7294	39
Japan	-0.0223		0.4005	34
Netherlands		0.0702	0.2119	25
New Zealand			0.3069	12
Norway	-0.0416		0.3885	27
Portugal			0.3485	9
Spain	-0.0077	0.2558	0.7459	14
Sweden			0.1033	34
UK			0.0903	35
US	-0.0059	0.0594	0.2861	39

Discretionary budget balance				
	ugap1	debtratio1	R-Squared	N
Australia	0.0237		0.6717	16
Austria			0.1268	34
Belgium			0.1129	30
Canada	0.0170		0.2107	39
Denmark			0.3228	24
Finland			0.1509	29
France	0.0256		0.3277	27
Germany	0.0305		0.3745	38
Greece				0
Ireland	0.0289		0.2122	23
Italy			0.0899	39
Japan	0.0750	-0.0819	0.4228	30
Netherlands	0.0158		0.2115	31
New Zealand			0.3530	12
Norway			0.0987	22
Portugal	-0.0375	1.7875	0.8004	9
Spain			0.3529	14
Sweden	0.0238		0.4227	34
UK	0.0136		0.2923	30
US			0.1222	39

Cyclically adjusted balance				
	ugap1	debtratio1	R-Squared	N
Australia	-0.0103		0.5243	16
Austria	-0.0158	0.0369	0.2977	32
Belgium		0.1237	0.6971	33
Canada	-0.0098	0.1634	0.7122	35
Denmark	-0.0127	0.1128	0.4931	24
Finland			0.1063	28
France			0.1971	27
Germany			0.2271	36
Greece		0.0810	0.5594	29
Ireland			0.0941	25
Italy	-0.0101	0.1124	0.7682	39
Japan	-0.0189		0.3722	34
Netherlands	0.0047		0.2484	25
New Zealand		0.1021	0.6225	12
Norway	-0.0172		0.2436	26
Portugal	-0.0125	0.5522	0.8718	9
Spain	-0.0045	0.2097	0.6529	14
Sweden	-0.0202	0.2409	0.4144	25
UK			0.0239	34
US	-0.0041	0.0550	0.2196	39

Discretionary budget balance, complex				
	ugap1	debtratio1	R-Squared	N
Australia				0
Austria			0.1266	30
Belgium	0.0179		0.2493	30
Canada	0.0195		0.2984	39
Denmark			0.2980	12
Finland	0.0110	-0.1202	0.2248	29
France	0.0267		0.3903	27
Germany	0.0276		0.3150	38
Greece				0
Ireland	0.0273		0.2019	23
Italy			0.1066	39
Japan	0.0660	-0.0789	0.4773	30
Netherlands			0.1136	30
New Zealand	0.0797	-0.5158	0.5796	12
Norway			0.0592	22
Portugal	-0.0586	2.5032	0.9941	5
Spain			0.1872	14
Sweden	0.0292		0.4657	34
UK	0.0167		0.2628	37
US			0.1417	39

C2. Time trends estimates

1960-1972	**Unempl. gap**		**Debt/GDP ratio**		**R-**	
Change indicators:	**Coef**	**P-value**	**Coef**	**P-Value**	**Squared**	**N**
Change in primary balance	0.0047	*0.302*	-0.1071	*0.368*	0.5822	31
Change in CAB	0.0045	*0.484*	-0.0130	*0.943*	0.7034	20
Blanchard's Fiscal Impulse	0.0047	*0.305*	-0.1812	*0.140*	0.6000	31
Holden-Braconier	0.0006	*0.899*	-0.1598	*0.226*	0.6601	31
Level indicators:						
Primary balance	0.0014	*0.765*	-0.1040	*0.336*	0.8672	33
CAB	0.0002	*0.950*	**-0.3219**	*0.006*	0.9178	26
Discretionary budget balance	-0.0021	*0.915*	**-1.3018**	*0.013*	0.5723	31
Discretionary budget balance, c	0.0232	*0.207*	-0.0737	*0.800*	0.5954	34
1973-1982	**Unempl. gap**		**Debt/GDP ratio**		**R-**	
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**	**Squared**	**N**
Change in primary balance	0.0008	*0.668*	**0.0426**	*0.068*	0.3656	120
Change in CAB	-0.0021	*0.338*	0.0046	*0.854*	0.2829	106
Blanchard's Fiscal Impulse	0.0005	*0.792*	0.0318	*0.152*	0.3453	128
Holden-Braconier	-0.0030	*0.144*	0.0251	*0.288*	0.2641	116
Level indicators:						
Primary balance	-0.0025	*0.220*	-0.0521	*0.034*	0.7516	122
CAB	-0.0021	*0.292*	**-0.0658**	*0.005*	0.7763	113
Discretionary budget balance	0.0003	*0.959*	0.0426	*0.590*	0.5319	108
Discretionary budget balance, c	0.0000	*0.998*	-0.0618	*0.396*	0.5657	105
1983-1992	**Unempl. gap**		**Debt/GDP ratio**		**R-**	
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**	**Squared**	**N**
Change in primary balance	-0.0001	*0.921*	**0.1001**	*0.000*	0.3983	166
Change in CAB	**-0.0031**	*0.010*	**0.0718**	*0.000*	0.2994	166
Blanchard's Fiscal Impulse	0.0008	*0.548*	**0.0951**	*0.000*	0.3762	166
Holden-Braconier	-0.0011	*0.472*	**0.0481**	*0.042*	0.2944	140
Level indicators:						
Primary balance	**-0.0092**	*0.000*	**0.1169**	*0.000*	0.5999	166
CAB	**-0.0032**	*0.029*	**0.0795**	*0.000*	0.6705	166
Discretionary budget balance	0.0034	*0.410*	0.0800	*0.208*	0.3781	156
Discretionary budget balance, c	0.0028	*0.490*	0.0261	*0.670*	0.4547	142
1993-2004	**Unempl. gap**		**Debt/GDP ratio**		**R-**	
Change indicators:	**Coef**	**P-Value**	**Coef**	**P-Value**	**Squared**	**N**
Change in primary balance	0.0009	*0.338*	**0.0261**	*0.005*	0.3872	237
Change in CAB	-0.0007	*0.375*	**0.0219**	*0.005*	0.2278	237
Blanchard's Fiscal Impulse	0.0017	*0.094*	**0.0225**	*0.016*	0.3526	237
Holden-Braconier	0.0001	*0.936*	0.0178	*0.297*	0.1905	166
Level indicators:						
Primary balance	**-0.0084**	*0.000*	**0.0254**	*0.035*	0.7164	237
CAB	**-0.0036**	*0.001*	**0.0201**	*0.040*	0.7912	237
Discretionary budget balance	0.0057	*0.080*	-0.0072	*0.810*	0.3563	225
Discretionary budget balance, c	**0.0074**	*0.026*	-0.0069	*0.817*	0.4000	209
Coefficients in bold are significant on a 95% level.						

C3. Political indicators estimates

Estimation by political position:

Left (govlr3 < -12)	**ugap1**	***P-Value***	**debtratio1**	***P-Value***	**R-Squared**	**N**
dbalr	-0.0021	*0.414*	0.0345	*0.305*	0.4551	87
dcabr	**-0.0043**	*0.074*	0.0261	*0.566*	0.5329	72
bfi	-0.0006	*0.804*	0.0260	*0.388*	0.4886	92
dbd	**-0.0046**	*0.050*	0.0266	*0.381*	0.5147	90
balr	**-0.0079**	*0.002*	0.0020	*0.949*	0.7669	89
cabr	-0.0037	*0.066*	-0.0289	*0.357*	0.9146	77
bd	0.0013	*0.871*	0.1891	*0.233*	0.5182	86
bdc	-0.0062	*0.424*	0.0095	*0.941*	0.5790	84
Centre - Left (-12 <= govlr3 < -5)						
dbalr	-0.0002	*0.927*	0.0435	*0.122*	0.6179	79
dcabr	-0.0039	*0.084*	0.0411	*0.102*	0.5691	76
bfi	0.0000	*0.998*	0.0377	*0.180*	0.5912	80
dbd	-0.0005	*0.833*	0.0699	*0.029*	0.7577	68
balr	**-0.0145**	*0.000*	0.0586	*0.013*	0.9133	80
cabr	**-0.0090**	*0.001*	0.0653	*0.016*	0.8454	78
bd	0.0056	*0.391*	0.0286	*0.660*	0.7027	83
bdc	0.0037	*0.541*	0.0137	*0.812*	0.7519	77
Centre (-5 <= govlr3 < 5)						
dbalr	0.0040	*0.074*	0.0502	*0.223*	0.7771	83
dcabr	-0.0007	*0.771*	0.0332	*0.456*	0.6892	79
bfi	0.0037	*0.132*	0.0724	*0.107*	0.6863	85
dbd	0.0014	*0.588*	0.0243	*0.610*	0.7213	80
balr	0.0017	*0.573*	0.0087	*0.875*	0.8672	84
cabr	0.0023	*0.497*	0.0302	*0.634*	0.8158	82
bd	-0.0027	*0.704*	0.1676	*0.195*	0.7391	84
bdc	0.0007	*0.930*	0.1671	*0.266*	0.7734	79
Centre - Right (5 <= govlr3 < 12)						
dbalr	0.0044	*0.359*	0.0664	*0.297*	0.9045	38
dcabr	0.0026	*0.662*	0.0440	*0.573*	0.8693	38
bfi	0.0078	*0.151*	0.0675	*0.328*	0.8828	38
dbd	0.0154	*0.104*	0.1397	*0.242*	0.8175	38
balr	**0.0087**	*0.013*	0.3177	*0.000*	0.9759	38
cabr	**0.0110**	*0.020*	0.3484	*0.000*	0.9595	38
bd	**0.0435**	*0.032*	0.4409	*0.082*	0.9250	35
bdc	**0.0462**	*0.017*	0.4884	*0.039*	0.9668	36
Right (govlr3 >= 12)						
dbalr	0.0068	*0.041*	0.0158	*0.664*	0.6881	59
dcabr	0.0026	*0.327*	-0.0052	*0.857*	0.5851	58
bfi	**0.0060**	*0.026*	0.0159	*0.586*	0.6910	59
dbd	0.0002	*0.945*	0.0149	*0.649*	0.6953	52
balr	-0.0038	*0.244*	0.1671	*0.000*	0.9336	59
cabr	-0.0005	*0.847*	0.1500	*0.000*	0.9318	59
bd	-0.0009	*0.924*	0.0547	*0.609*	0.5405	57
bdc	0.0013	*0.914*	-0.0176	*0.892*	0.5921	50

Government stance and interactions:

	Unempl. Gap		Government stance		Unempl * Govt		Debt/GDP ratio			
(abbreviated:)	ugap1	*P-Value*	lgovlr3	*P-Value*	uginteract	*P-Value*	debtratio1	*P-Value*	R-Squared	N
dbalr	0.0015	*0.047*	-0.000038	*0.667*	0.000082	*0.027*	0.0261	*0.000*	0.3496	346
dcabr	-0.0013	*0.068*	0.000016	*0.849*	0.000053	*0.136*	0.0235	*0.001*	0.2306	323
bfi	0.0020	*0.004*	-0.000019	*0.818*	0.000070	*0.050*	0.0255	*0.000*	0.3251	354
dbd	0.0000	*0.974*	-0.000012	*0.907*	0.000041	*0.324*	0.0239	*0.002*	0.2685	328
balr	-0.0062	*0.000*	-0.000365	*0.009*	0.000155	*0.009*	0.0630	*0.000*	0.4694	350
cabr	-0.0013	*0.191*	-0.000289	*0.016*	0.000136	*0.007*	0.0719	*0.000*	0.5755	334
bd	0.0033	*0.165*	0.000578	*0.039*	-0.000153	*0.192*	0.0599	*0.014*	0.4079	345
bdc	0.0046	*0.056*	0.000180	*0.534*	-0.000014	*0.912*	0.0144	*0.493*	0.4645	326

Government stance, strength and interactions:

	Unempl. Gap		Government stance		Government strength	
Change indicators:	ugap1	*P-Value*	lgovlr3	*P-Value*	lgovspct	*P-Value*
Change in primary balance	0.0070	*0.020*	-0.000039	*0.655*	0.000065	*0.535*
Change in CAB	0.0041	*0.149*	0.000018	*0.832*	0.000008	*0.936*
Blanchard's Fiscal Impulse	0.0086	*0.003*	-0.000017	*0.842*	0.000041	*0.684*
Holden-Braconier	0.0056	*0.098*	-0.000016	*0.871*	0.000050	*0.657*
Level indicators:						
Primary balance	-0.0157	*0.001*	-0.000373	*0.008*	-0.000016	*0.923*
CAB	-0.0116	*0.004*	-0.000246	*0.039*	-0.000374	*0.010*
Discretionary budget balance	0.0209	*0.018*	0.000589	*0.036*	0.000066	*0.829*
Discretionary budget balance, c	0.0282	*0.002*	0.000178	*0.536*	0.000141	*0.645*

	Unempl * Govt		Unempl * Strength		Debt/GDP ratio		R-Squared	N
(cont'd)	uginteract	*P-Value*	usinteract	*P-Value*	debtratio1	*P-Value*		
dbalr	0.000086	*0.020*	-0.000096	*0.056*	0.0238	*0.001*	0.3577	346
dcabr	0.000058	*0.100*	-0.000094	*0.049*	0.0213	*0.003*	0.2425	323
bfi	0.000074	*0.037*	-0.000114	*0.019*	0.0228	*0.001*	0.3377	354
dbd	0.000050	*0.236*	-0.000095	*0.087*	0.0219	*0.005*	0.2762	328
balr	0.000147	*0.012*	0.000166	*0.038*	0.0661	*0.000*	0.4775	350
cabr	0.000121	*0.014*	0.000176	*0.010*	0.0770	*0.000*	0.5908	334
bd	-0.000141	*0.229*	-0.000305	*0.039*	0.0502	*0.042*	0.4167	345
bdc	0.000022	*0.860*	-0.000407	*0.006*	0.0103	*0.620*	0.4791	326

Appendix D: Available on request

Some information was not suitable for an appendix on paper. The following can be obtained from the author on request (my e-mail address is currently j.h.modalsli@student.sv.uio.no):

- Regression output logs from STATA for all equations
- Excel data presentation macros (not very user-friendly)
- McDonald / Mendes data conversion macro (not very user-friendly either)
- Stata do-file with calculations
- Data file (I do not think that I am allowed to distribute OECD Economic Outlook data freely; until anything else is proved, the file will only be made available to those examining (censoring?) the thesis.)

References

Acocella, Nicola (1998): The Foundations of Economic Policy: Values and techniques. Cambridge University Press

Alesina, Alberto and Robert Perotti (1995): "Fiscal expansions and adjustments in OECD countries", Economic Policy October 1995, p. 205-248

Alesina, Alberto and Roberto Perotti (1996a): "Fiscal adjustments in OECD countries: Composition and macroeconomic effects", NBER Working Paper 5730

Alesina, Alberto and Roberto Perotti (1996b): "Fiscal Discipline and the Budget Process", American Economic Review 86, 1996

Alesina, Alberto, Roberto Perotti and Jose Tavares (1998): "The Political Economy of Fiscal Adjustments", Brookings Papers of Economic Activity 1, 1998, p. 197 - 266

Attanasio, O.P., L. Picci and A.E. Scorcu (2000): "Saving, Growth, and Investment: A macroeconomic analysis using a panel of countries", Review of Economics and Statistics 82 (2), 2000, p. 182-211

Baltagi, B.H., J.M. Griffin and W. Xiong (2000): "To pool or not to pool: Homogenous versus heterogeneous estimators applied to cigarette demand", Review of Economics and Statistics 82 (1), 2000, p. 117-126

Bernheim, B.D. (1989): "A Neoclassical Perspective on Budget Deficits", Journal of Economic Perspectives 3, No. 2 (Spring, 1989), p. 55-72

Blanchard, Olivier (1990): "Suggestions for a new set of fiscal indicators", OECD Working Paper no. 79

Blanchard, Olivier (2000): Macroeconomics, Second Edition. Prentice Hall

Braconier, Henrik and Steinar Holden (1999): "The Public Budget Balance, Fiscal Indicators and Cyclical Sensivity in the Nordic Countries", TemaNord 1999:575

Budge, I., H.-D. Klingemann, A. Volkens, J. Bara and E. Tanenbaum (2001): Mapping Policy Preferences: Estimates for Parties, Electors and Governments 1945-1998. Oxford University Press

Burda, M.C. and C. Wyplosz (2001): Macroeconomics, a European text, Third Edition. Oxford University Press, New York

Choraqui, Jean-Claude, Robert P. Hagemann and Nicola Sartor (1990): "Indicators of Fiscal Policy: A Re-Examination", OECD Working Paper no. 78

De Grauwe, Paul (2003): Economics of Monetary Union, Fifth Edition. Oxford University Press

Eichengreen, Barry (1998): Comment to Alesina, Perotti and Tavares, Brookings Papers of Economic Activity 1998:1, p. 255-262

Fatás, Antonio and Ilian Mihov (2001): “Fiscal Policy and Business Cycles: An Empirical Investigation”, Moneda y Credito, vol.212, 2001. Downloaded from http://faculty.insead.fr/mihov/Research.htm

Galí, Jordi and Roberto Perotti (2003): "Fiscal Policy and Monetary Policy Integration in Europe", Economic Policy 37, October 2003

Galí, Jordi (2004): “Modern Perspectives on Stabilization Policies”, Lecture, CESifo Workshop,

Giavazzi, Fransesco and Marco Pagano (1990): “Can severe fiscal contractions be expansionary? Tales of two small European countries”, NBER Working Paper Series

Giavazzi, Fransesco and Marco Pagano (1995): “Non-Keynesian Effects of Fiscal Policy Changes: International Evidence and the Swedish Experience”, NBER Working Paper Series

Giavazzi, Fransesco (1995): Reply to Alesina and Perotti, Economic Policy October 1995, p. 240-241

Giorno, Claude, Pete Richardson, Deborah Roseveare and Paul van den Noord (1995): “Estimating potential output, output gaps and structural budget balances”, OECD Working Paper no. 152

Gramlich, E.M. (1989): “Budget Deficits and National Saving: Are Politicians Exogenous?”, Journal of Economic Perspectives 3, No. 2, 1989, p. 23-35

Hogan, Vincent (2004): “Expansionary Fiscal Contractions? Evidence from Panel Data”, Scandinavian Journal of Economics 106(4), p. 647-659

Holden, Steinar (2005): “Fiscal Indicators”, unpublished

Judge, George G., R. Carter Hill and William E. Griffiths (2001): Undergraduate Econometrics, Second Edition. John Wiley & Sons

Kennedy, Peter (2003): A Guide to Econometrics, Fifth Edition. Blackwell Publishing

Keynes, John Maynard (1936): The General Theory of Employment, Interest and Money. Prometheus Books, Amherst 1997

Kydland, Finn and Robert Prescott (1977): “Rules Rather than Discretion: The Inconsistency of Optimal Plans”, Journal of Political Economy 85, no. 3, 1977 (p. 473-492)

Lodewijks, John (2003): “Bastard Keynesianism”, in: The Elgar Companion to Post Keynesian Economics, J. E. King (ed.), p. 24-29. Elgar Publishing, Cheltenham (UK)

Marinheiro, Carlos J. F. (2005): “Has the Stability and Growth Pact Stabilised?”, CESifo Working Paper no. 1411

van den Noord, Paul (2000): "The size and role of automatic fiscal stabilizers in the 1990s and beyond", OECD Economics Department Working Paper No. 230

Palmer, R.R. and Joel Colton (1995): A History of the Modern World, 8th Edition. McGraw-Hill, New York

Perotti, Roberto (1999): "Fiscal policy in good times and bad", Quarterly Journal of Economics

Persson, Torsten and Guido Tabellini (2000): Political Economics: Explaining Economic Policy. MIT Press, London

Pesaran, M. H. and Ron Smith (1995): "Estimating long-run relationships from dynamic heterogeneous panels", Journal of Econometrics 68

Romer, David (2001): Advanced Macroeconomics, Second Edition. McGraw-Hill

Stiglitz, Joseph (2000): Economics of the Public Sector, Third Edition. W. W. Norton, New York

"The Stability and Growth Pact", European Commission Internet pages, http://europa.eu.int/comm/economy_finance/about/activities/sgp/sgp_en.htm, accessed 2005-03-22

Tornell, Aaron and Philip Lane (1999): "The Voracity Effect", American Economic Review 89 (1), 1999, p. 22-46